FORESTS

JUNE 1943

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"Just getting the wire laid was a tough problem. Keeping it intact in bombings, shellings and adverse weather is a twenty-four-hour proposition. . . . Wire repair crews are made up of four men. Three stand guard while the other works."
(From story by Sgt. James W. Hurlbut, Marine Corps Combat Correspondent)

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WAR CALLS COME FIRST

BELL TELEPHONE SYSTEM

AMERICAN FORESTS

VOLUME 49 JUNE, 1943 NUMBER 6

Editor
OVID BUTLER

Associate Editors
LILIAN CROMELIN ERLE KAUFFMAN

CONTENTS

	Page
THE FOREST EXCHANGE	274
THE EDITOR'S LOG	276
PAPER AT WAR *By John Strange*	278
DREAM MOUNTAIN *By John Pratt Whitman*	283
TWO-WAY WASTE *By William Marshall Rush*	286
HISTORIC FOREST FIRES IN AMERICA *By John D. Guthrie*	290
EDITORIAL *Pressure On The Parks*	295
BLACKOUT BASS IN THE NATION'S CAPITAL *By F. Wallace Taber*	296
PINES WITH V-FACES *By Ruth Moore*	298
YOUR SHADE TREES—Trees For Your Garden *By O. H. Stude*	302
MARYLAND ADOPTS FOREST PRACTICE LAW	306
THE CONSERVATION CALENDAR	308
NEW PUBLICATIONS	310
JOHN A. NEWLIN DIES	311

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American Forests

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The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational work in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. Its resources and income are devoted to the advancement of conservation in the interests of public welfare, and all citizens are welcomed to membership.

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The Forest Exchange

"Poncho" Tree

SIR: Recently I visited the Cayapa Indian country in northwest Ecuador and discovered what I call the "Poncho Tree." It is a huge tree from which the outer bark is first stripped. Then the inner bark is slit up and down and peeled around the tree. It suggests finely braided buckskin and is about as tough. When washed it becomes real pliable and makes a very satisfactory poncho or blanket. The Indian chief presented me with a large and perfect blanket—not a knot hole in it! Moreover, this material must contain some essential oil distasteful to fleas and other insects, for they avoid it. I'm thinking of having underwear made of it for use in the tropics!—*W. T. Cox*, Lima, Peru.

"Assault on Conservation"

SIR: The plan of the U. S. Forest Service for Superior National Forest, in Minnesota, and the plan of the Quetico-Superior Council to save the entire Quetico-Superior region in Minnesota and Ontario, has been gravely jeopardized by, of all groups, the Minnesota Conservation Department, which has introduced Bill 650 in the Minnesota senate which limits the national forest to its "original" boundaries and forbids expansion except by unanimous consent of the state attorney general and state auditor. Sportsmen and conservationists throughout the Middlewest are shocked and stunned by this backward step. We hope that conservationists throughout the United States will rise up and demand that this bill be defeated and that the Minnesota Conservation Department be investigated to determine what interests motivated this definite assault on conservation. — *W. Schwass*, Chicago, Illinois.

From Sequoia Park

SIR: I have recently read your March issue of AMERICAN FORESTS and would like to tell you how much I enjoyed the "Editor's Log" and particularly the item captioned "In England." Your forecast of conditions we may expect here after the war is of particular interest to all of us in the national parks.

I also was glad to see the item on the Editorial page entitled "The War and the Parks." When The American Forestry Association comes out like this to protect the national park policies, it is of real assistance to those of us in the field who are working together in forests and parks on matters of national conservation.

Your magazine is one of those which all the rangers and many of the other employees much appreciate. — *John R. White*, Superintendent, Sequoia National Park, California.

The May Issue

Comment continues to come in on the special May issue of AMERICAN FORESTS, which was devoted to the Douglas Fir region of Oregon and Washington, the tenor of which is indicated by the following:

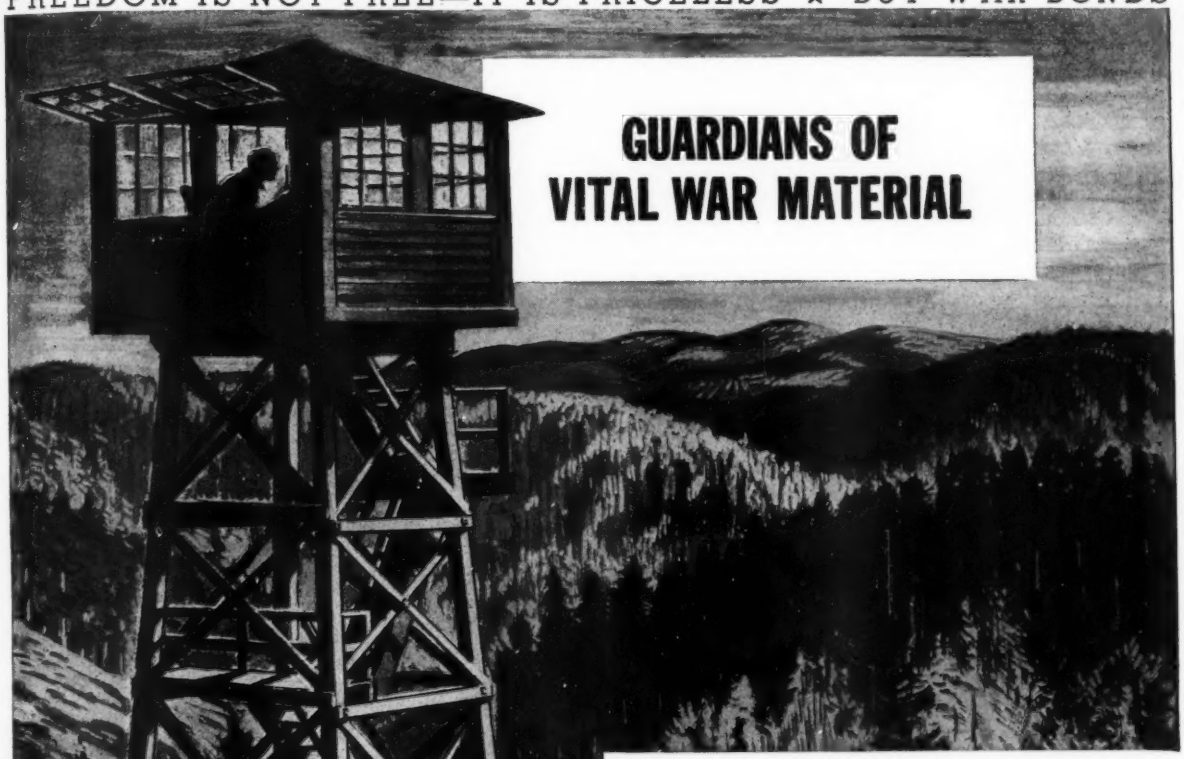
SIR: Congratulations on the fine special number for May. It is an excellent job. I presume that you are intending to get out a series of special numbers from time to time and will be glad to assist in any way when you get around to the Southeastern section.—*William F. Jacobs*, Assistant State Forester, Florida Forest and Park Service, Tallahassee, Florida.

SIR: Your May issue of AMERICAN FORESTS is one of the finest I have ever seen.—*Roswell M. Roper*, Water Engineer of the City of East Orange, N. J.

SIR: I would like to compliment you and the staff of AMERICAN FORESTS on the most excellent special number on the Douglas Fir region, which I have perused with great interest. Most of the articles and editorials are obviously so authoritative that I am filing my copy of this issue for future reference in connection with forestry legislation, and I assure you it will come in very handy at frequent times. I am looking forward to seeing future issues of AMERICAN FORESTS because I feel your magazine is one of the best, if not the best, in the field.—*Hon. Fred Norman*, Representative from Washington, House Office Building, Washington, D. C.

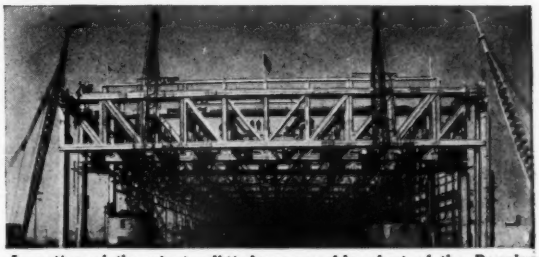
SIR: The *American Lumberman* would like to express its hearty congratulations to the editors of AMERICAN FORESTS upon the publication of its May 1943 issue devoted to the Douglas Fir region. It is well organized, attractively laid out, and certainly accomplishes its purpose of presenting a cross-section of the forest picture in the Pacific Northwest. It is a real credit to your editorial staff and a mighty worthwhile contribution to the cause of industrial forestry. — *Elmer H. Johnson*, Managing Editor, *American Lumberman*, Chicago, Illinois.

FREEDOM IS NOT FREE—IT IS PRICELESS ★ *BUY WAR BONDS*



WOOD GOES TO WAR
An MGM Technicolor short by James A. Fitzpatrick.
Ask your theater when you can see it.

Timber Builds Great Plants for War and Peace



A section of the giant, all-timber assembly plant of the Douglas Aircraft Company, just opened for operations. Architect-Engineer-Manager, The Austin Company, Chicago.

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THE EDITOR'S LOG

Birth of the Victory Garden

Lest credit for worthy deeds be too much forgotten, a word needs to be said here about the war gardens of 1917. Busy this spring in their Victory Gardens of 1943, few people seem to remember garden time during the first year of our entry into World War I. Then, as now, American soldiers were crossing the sea to fight on foreign battlefields. Then, as now, the national food supply, stretching from the home front to the fighting front, was critically short. Then, as now, the situation was met by producing more food—in neglected backyards, on vacant lots and on other idle and accessible land. Victory Gardens of 1943 are really the War Gardens of 1917.

The nationwide campaign of a quarter century ago for home food production was inspired by Charles Lathrop Pack, then President of The American Forestry Association. Foreseeing a critical situation because of crop failures and heavy food requirements for our fighting forces and allies, this great conservationist conceived the idea that the home and back lot garden, if nationalized, could help materially in solving the problem. He conferred with other eminent men, gained their support, and brought into existence the National War Garden Commission.

The American Forestry Association, although engaged in other war work, contributed its national headquarters, its executive secretary and its business organization to the cause. Under this active direction there followed an intense national campaign for War Gardens the success of which is graphically written in the history of World War I. What is not so generally known is that this effort which inspired several million American families to grow a portion of their own food requirements was not only organized by Mr. Park but largely financed by him. As president of the War Garden Commission, he personally contributed more than $350,000 to its campaign.

The campaign was launched through the press of the nation and through regional committees working in cooperation with public-spirited citizens, city councils, chambers of commerce, boards of trade, civic clubs, boy and girl scouts, playground associations and numerous other organizations. At one time more than 2,000 newspapers were giving daily service on the care of War Gardens to an estimated 20,000,000 readers—a service originating at the Association's headquarters. Altogether, more than 7,000,000 pieces of literature were printed and distributed—advice on the selection of seeds, the care and cultivation of vegetables, and the canning and drying of the crops. Material for canning and drying prepared by specialists of the Pratt Institute in New York, was distributed under the slogan CAN THE KAISER. This and other slogans, such as SOW THE SEEDS OF LIBERTY, were carried to the people of the country by thousands of posters, created by such well known artists as James Montgomery Flagg.

President Wilson gave impetus to the movement by proclaiming that "Everyone who creates or cultivates a garden helps, and helps greatly, to solve the problem of feeding the nation."

Thus, a quarter century ago, was the present day Victory Garden born, given national form and organization and largely financed by Charles Lathrop Pack, President of The American Forestry Association.

Pan American Forestry Mission

The appointment of Arthur T. Upson, until recently head of the Lumber and Lumber Products Branch of the War Production Board, to direct all activities of the Forest Service in tropical America, serves to focus attention on the little publicized mission of United States foresters who for the past four months have been energetically at work in Central and South America.

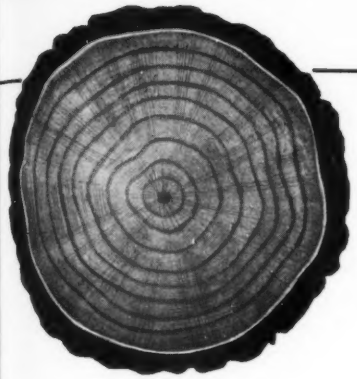
On what is termed the Latin American Forestry Resource Project, carried out by the Forest Service in cooperation with the Coordinator of Inter-American Affairs, this mission, now under Mr. Upson's direction, is seeking to increase knowledge of the extent, characteristics, availability and accessibility of commercial forest stands and to determine the qualities and usefulness of promising tropical timber species under conditions of war. In essence, the project is a practical survey of common tropical woods suitable and available for local uses in the furtherance of the war effort.

The four-man mission now in Costa Rica, for example, is engaged primarily in examining and testing common woods suitable for construction purposes and which may be put to use in completing the unfinished sections of the Pan American Highway and other strategic roads. This mission is also seeking woods suitable for packaging foods, a use that will grow in importance as the Pan American food program expands. This program is now being vigorously developed to supply our own troops stationed in the tropics as well as to provide for commercial displacements brought about by wartime shipping losses. The Ecuador mission is mainly engaged at the present time in examining and testing woods which may be used for shipbuilding.

Unlike the projects of the Bureau of Economic Warfare, a procurement program which has to do with the future as well as present development of such well known and established tropical woods as mahogany, balsa and lignum vitae, the primary task of the Latin American Forest Resource Project is to discover through simple and practical tests the common woods that may be used, or their uses expanded, locally in connection with the immediate war program. That these studies may lead to important future developments may be taken for granted, but the project as now set up looks only to such urgent jobs as supplying locally termite-resistant woods which can serve in place of steel and concrete in bridges, piling and culverts on strategic road building projects, light woods suitable for the manufacture of crates and boxing for food shipments, and timber suitable and accessible for the building of cargo ships.

The mission of foresters now in Costa Rica consists of John Scholten, timber mechanics specialist of the Forest Products Laboratory, Madison, Wisconsin; W. A. Dayton, chief of the division of dendrology and forage investigations of the Forest Service; William Barbour, formerly with the Tropical Plant Research Foundation; and C. A. Merker, supervisor of the Coronado National Forest, Arizona.

The mission in Ecuador includes Leslie R. Holdridge and Jose Marrero of the Tropical Forest Experiment Station, Puerto Rico; L. V. Teesdale



of the division of timber physics, Forest Products Laboratory at Madison, specialist in moisture content of wood in use and lumber storage; Eugene Horn, formerly associated with the Forest Products Laboratory and more recently engaged in land development in Brazil; and J. E. Meyer, wood utilization expert formerly with the National Lumber Manufacturers Association, Washington, D. C.

Under the direction of Mr. Upson, this small band of American foresters, unheralded and unsung, are performing a war job of vital importance.

A Coup D'Etat

President Roosevelt accomplished a *coup d'etat* on March 15 when he created by Executive Order the 221,000 acre Jackson Hole National Monument in Wyoming. The area adjoins the Teton National Forest on the east and south and embraces some 130,000 acres of the Teton National Forest, 3,200 acres of gift land owned by John D. Rockefeller, Jr., and parts of the Elk Wildlife Refuge. All these lands are now placed under the administration of the National Park Service. In addition, the area includes within its boundaries 17,000 acres of privately owned cattle ranches.

For the past fifteen years or more, this area has been a conservation battleground whose controversial cross currents have blown hot and cold even to Capitol Hill and have involved the State of Wyoming, the National Park Service, the old Biological Survey, the U. S. Forest Service, and all manner of conservation groups. It has been studied, examined, and fought over by committees of Congress, federal and state agencies and sundry wildlife, park and forest commissions. It is a key area to the solution of the Yellowstone elk problem, and the main issue has been how and by what governmental agency it can be best handled in the common interests of the state, the federal government, and all the people concerned. As a knotty public land problem, there has been none more knotty — and apparently unsolvable. In any event, every effort through the years to reconcile divergent ideas of management has inevitably led to one stalemate after another.

This was its situation on March 15 when the President, by a stroke of the pen, settled the matter by blanketing the whole area as a national monument. Or has he really settled it? Coming as a bolt out of quiet skies, the President's action took the Wyoming representatives in Congress, the U. S. Forest Service, the Fish and Wildlife Service, and apparently everyone else, except Secretary Ickes and the National Park Service, by complete surprise. It had been assumed that the conflict was quiescent for the duration and its sudden settlement under an act designed to preserve antiquities was both startling and confusing—and not without humor.

Repercussions from the State of Wyoming were prompt. Senator O'Mahoney condemned the action in the Senate, charging that the President had exceeded his authority and had overriden the wishes of his state and the will of Congress which in years past had refused to approve withdrawing so large an area from economic use. Senator Robertson from the same state protested that the means employed was a subterfuge to enlarge the Teton National Park. These protests were followed by a fusillade of bills in Congress by Wyoming members of the Senate and House seeking to riddle the President's action. One would abolish the Jackson Hole National Monument completely and restore to the Teton National Forest the area taken from it; another would repeal the President's statutory power to create national monuments anywhere; a third would require legislative sanction by a state before any area within its boundaries could be set aside as a national monument; and a fourth calls for an investigation by the Public Lands Committee of the Senate of the whole federal system of national monuments, forests, Indian reservations, and parks. In view of the present temper and jealousy of Congress in respect to legislative action by executive decree, the Jackson Hole National Monument may be here today and gone tomorrow.

If it endures the opposition it has raised in Congress, many conservationists are wondering just what sort of a national monument it will be. Under the law monuments are supposed to exclude hunting, grazing, lumbering, and other economic pursuits. Secretary Ickes, however, has announced that grazing will be continued in the area as long as holders of present permits live and that the driving of stock through the area to reach back country will not be barred. Hunting within the area, however, appears to be definitely out, although, presumably, sportsmen who bag elk beyond the boundaries of the monument will be allowed to pack the carcasses out through the area. But, says the National Park Service, these and other questions will all be worked out in an orderly way.

Timber Looting in Holland

To the question so often raised of how thoroughly the Nazis are looting the forests of the occupied countries, the following item from the April issue of the *Netherlands News Digest*, published by the Netherlands Information Bureau with headquarters in New York, is at least a partial answer:

"German requisitions for timber from Holland's meager forests which cover less than eight percent of the country," it is stated, "are so great that the future of the small lumber industry has been endangered. Owners of timber tracts have been forced to cut immature stock on an extensive scale, and as the modest coal production is diverted to Germany, wood is also in great demand for fuel. Even before the German invasion the country was obliged to rely heavily on imports of timber.

"Stating that the Netherlands imported only a third as much timber during 1942 as in 1941, the Swedish newspaper *Svensk Travardutidning* commented: 'It is a puzzle how the country can meet even her most pressing needs under the circmustances'."

Thus the indomitable Dutch, as the Poles and the Czechs before them, watch helplessly the rape of their forests by the most ruthless looters the world has ever known.

Ovid Butler

The demand for shipping containers has led to amazing developments in the use of paper as a substitute for wood on all fronts. Here Arab dock workers are unloading milk, shipped in paper containers, for the use of civilians in North Africa

Precious cargo shipped in paper boxes to New Guinea. The lives of countless soldiers will be saved by the supplies of blood plasma these Papuan natives are carrying—collected by the Red Cross and donated by millions of Americans. It is being taken to the front lines, to be used as needed in the treatment of wounded soldiers, sailors and marines

PAPER AT WAR

In Ways New and Old, This Product of the Forest is Helping to Forge Victory in the Production Lines and on the Battlefronts

By JOHN G. STRANGE

Paper is substituting for steel as protection for bombs in transit to battlefronts. This new type shipping ring is made of laminated layers of waste paper, protected by a steel strap and requires a minimum of precious steel as compared with the old type all-steel shipping bands

PAPER is in the thick of the war. Every phase of our war economy and our military operations somewhere along the line owes its effectiveness, and often its existence, to paper.

This does not refer to paper merely as the conveyor of messages and instructions, or as the medium for carrying news and educational matter—important as such uses may be. It means that paper actually is on the fighting front. Its sleeves are rolled up. It speaks with every bullet or shell that is fired. It rides with every tank. It soars with every plane. It plows the sea with every ship. It feeds our troops in all parts of the world. It warms their huts in the north and protects them from heat in the south. Paper *is* at war.

To those who regard paper as something used primarily for printing or writing, its war applications must be viewed with surprise. They may have a vague conception of other uses for paper but, by and large, it is to them a fragile material used for cultural purposes or for some of the conveniences of a highly developed civilization. They are astonished to discover that paper, or variations of it, are widely used for functional, mechanical, or service purposes.

It is a revelation for them to learn that paper will hold greases, oils, fats, volatile materials and even 100-octane gasoline; that it can be made stronger than metals; that paper can be formed into almost any structure or design; that it can be made so that it is nearly as strong when wet as when dry; that paper takes scuffing better than leather; that it is warmer than wool; that paper is used for mechanical, electrical and automotive parts; that it will resist fire; that it can be given almost an infinite number of properties; that paper is, indeed, an exceedingly versatile raw material. The enemy has not been unaware of fiber's versatility. They have a good name for it—*Universal Rohstoff*, or the material that will do anything. Fortunately, they have been unable to exploit paper as extensively as we have.

A clear concept of paper's role in the war is gained by looking briefly to this country's raw material picture. It has been abundantly clear in recent months that many commodities are not available in sufficient quantity to fill both war requirements and important civilian needs. This condition is due, in some instances, to the prodigious war production program. In other instances, it is caused by a throttling of materials ordinarily received from remote parts of the globe.

The identity of scarce or critical materials is no secret. The War Production Board, for example, regularly prepares a substitutions and supply bulletin. In this bulletin, materials are grouped according to availability. The first group includes materials whose supply is inadequate for war and essential civilian uses, and, in many cases, for war alone. Here one finds many of the metals, rubber, some chemicals, many grades of wood and fibers such as hemp, jute, manila and silk. Careful analysis of this picture supports the conclusion that, of all the significant materials our country employs, paper is the last which is reasonably available. Fortunately, as has been pointed out, paper is versatile, and, in the face of such circumstances, it is inevitable that its uses are extended.

The applications for paper in war might be separated under three broad headings: ordinary applications, ordinary applications extended, and completely new applications.

The ordinary uses are like an old pair of shoes. One takes them for granted, but they are awfully comfortable to have. Printing and writing, for example, are the most apparent applications for paper. The significance of newspapers, magazines, books and general literature as morale builders and educational media, should be manifest.

Further consideration of this field, however, shows that the entire execu-

tion of the war depends upon such papers. Without them, our complicated activities would cease. There would be chaos. Orders are directed, commands are issued on paper. The armed services are trained with manuals of paper. War plants are designed on paper. Planes and ships are assembled with the aid of paper. It is said, for example, that thirty tons of blueprint paper are necessary for one battleship! Goods are rationed with paper. Fifty-three carloads of paper went into Ration Book No. 3. War bonds are made of paper. Industry and commerce are expedited by paper. Railroad tickets are taking seventy-two percent more paper than in 1941. There will be 4,000,000,000 more tabulating cards used this year than last. Charts and maps are on paper.

In this war of small mobile units, think of how important maps are for intelligent operation. Here, incidentally, there have been interesting developments. Papers that fluoresce under red light are now available for certain maps. Courses can be determined without fear of flashing one's position to the enemy and without losing the eyes' adaptation to darkness when a quick maneuver may be the difference between failure and success. If you read the saga of Captain Edward Rickenbacker, his comment about maps dissolving in sea water would not apply to the latest papers. It is possible now to make maps that can be read in the pouring rain or immersed indefinitely in water and wrung out. Paper maps can be soiled with grease, blood, or dirt, and washed clean. In other words, they can take it!

The all-important aerial photographs which give away enemy secrets are printed on paper. Building and sheathing papers are used for the construction of cantonments and bases. We walk in shoes with fiber parts. Bombers are insulated with paper. Radios would not work, cables could not be laid, power plants would not operate, telephones would be muted without the papers that are used for electrical panels, parts and insulation.

Health is protected and preserved by sanitary papers. Automotive parts and ordnance are guarded from corrosion by paper. Ammunition is wadded and primed with paper and propelled by paper pulp. Fragile instruments and medical supplies are packed in paper. Chemicals and food are carried and saved from spoilage by paper. Industrial parts are shuttled all over the country and world in paper. Indeed, the significant uses for paper are so many that no one has ever presumed to have any more than a passing knowledge of them.

In considering papers whose ordinary applications have been extended, one is impressed especially by the field of food packaging. The extended use of food packaging papers is due to at least two factors; the first is the need for finding substitutes for metal packages or containers, and the second is the development of new types of foods.

A walk through a grocery or drug store will show quickly the profound changes that have occurred in packaging during the past year. New revisions are appearing almost weekly. Frozen food, dehydrated soups, edible oils, dessert powders and cocoa are a few illustrations. Paper caps and threaded paper

Among the new and significant uses of paper are the multiwall paper sacks developed for the handling and storage of chemicals and foods

covers are used on many glass jars. One of the outstanding jobs along this line is the cap used on a vacuumized jar for roasted ground coffee. Paper ends are substituting for metal ends on cans, and sift-proof boxes for powdered products are now used. Tooth powder, medical supplies, ointments, surgical dressings and sulfa drugs come in paper. Creams and polishes are carried in it. Lacquers, paints and lubricating oil are distributed in paper cans. Army rations are packaged in paper.

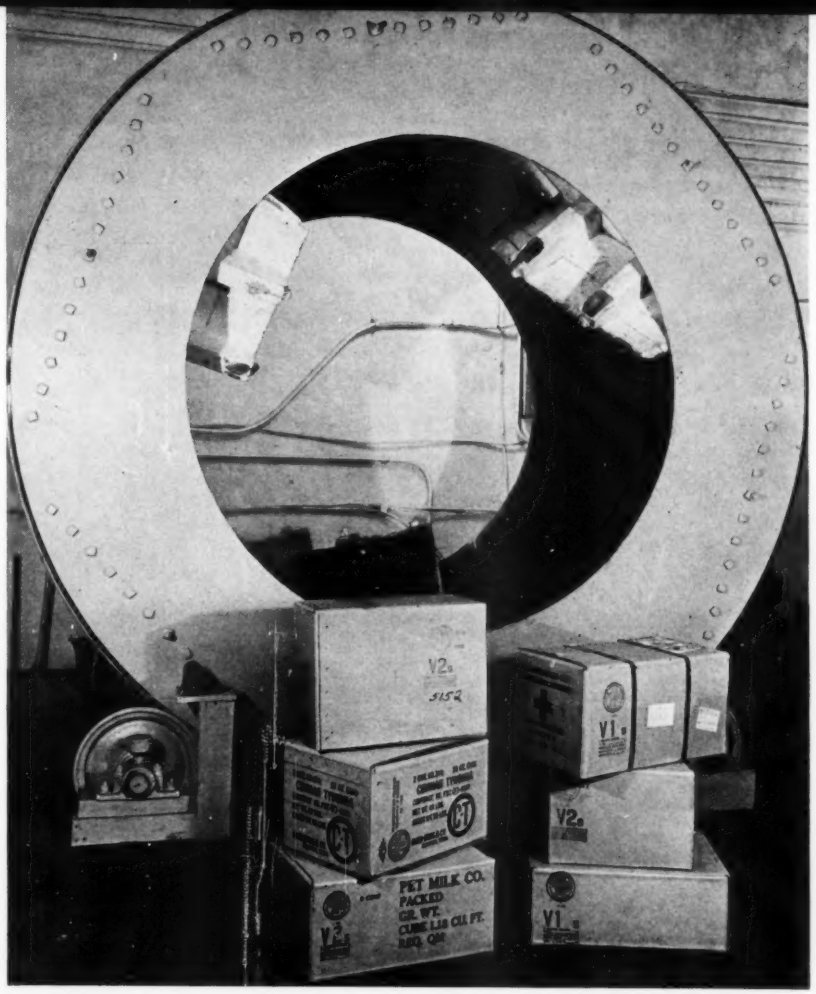
The scarcity of burlap, as well as metal, has enlarged the responsibilities of the multiwall type of paper sacks. Chemicals that always have been carried in metal drums are safely handled in such sacks. Naval stores, dehydrated molasses, calcium chloride and ammonium nitrate are examples. The last two, incidentally, previously used around 15,000 tons of steel annually. Cement and fertilizers are illustrations of products that formerly went in burlap.

A significant job of package conversion has been accomplished by the tobacco industry. Foil has been eliminated from cigarette wraps and it is said that the switch from metal tobacco cans and cigarette tins is conserving roughly 40,000 tons of metal yearly. Other industries have done equally well.

One extension to look forward to lies in the field of spinning or twisting papers. For years paper has been spun and used for products such as automobile seat covers, onion and fruit bags, rugs, furniture and ornamental gadgets. Now, with the country facing a shortage of one of its least glorified and most important materials—binder twine—it is essential that a substitute be found to carry at least part of the load. Twisted paper is one of the outstanding possibilities. It must be improved for this purpose, however, and considerable thought is being given to the problem, portending, it is hoped, a successful conclusion.

The United States and Canada require over 250,000,000 pounds of binder twine each year for harvesting wheat and oats. Normally, this twine is made of manila or sisal. These materials are not available in sufficient quantity to meet our needs.

(*Turn to page* 313)



The V-Box—answer to the urgent need for overseas shipping containers for war supplies. Different types of the V-Box are shown (some consigned to Russia), together with the seven-foot revolving drum used by the testing laboratory

"Surf-tested" containers for all-out war. This Gair container is a weather-proof, solid fibre can case, built to withstand pounding surf and submersion in the ocean for more than twenty-four hours without disintegration

Chocorua—the Dream Mountain. Round and round swirl the gauzy mists,—spirits of the mountain—catching the rose tints of morning and reflecting them on the majestic granite dome

Dream Mountain

By JOHN PRATT WHITMAN

THE mountain known as Chocorua rises thirty-four hundred feet above sea level near the town of Tamworth, New Hampshire. It rests on a granite foundation nine miles deep, and on its shoulders are forests of pine, spruce, hemlock, beech and birch. It is a dream mountain.

If this sounds paradoxical, consider the story of a Kansas youth who created it—created the dream mountain. It happened many years ago, long before he ever saw a real mountain, when the broad prairie, with its fifty-mile horizon, was his home.

Working in the rich soil of the plains, cultivating corn or harvesting the crops, this youth built up his idea of life. Possessed of an imaginative mind, he began to see life as an interesting ascent toward a goal that was typified by a mountain peak. Great boulders and cliffs were pictured as difficulties to be overcome, one by one, and by these conquests, he felt sure, his mental, spiritual and physical qualities would be strengthened and matured.

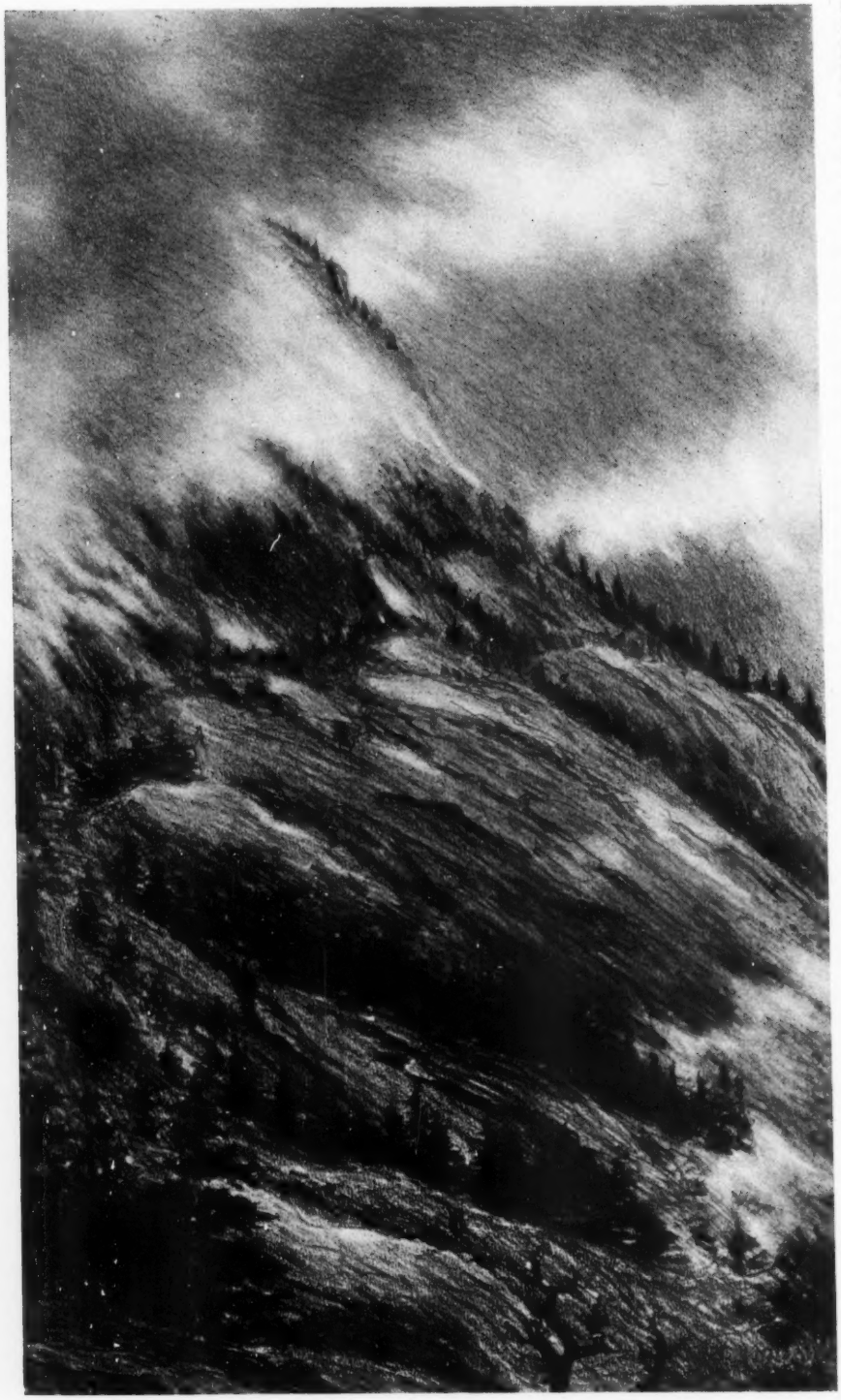
Before long, his farm duties, his studies and his human relationships took on the shape of mountain ramparts, a grand battle for a wider and wiser view of existence upon this earth. This kind of mountain was a thing of mystery, the abode of gods, the incarnation of man's achievements. He did not believe it could have its counterpart in actual stone and earth and growing things.

But in this he was wrong. Some years later, through unforeseen circumstances, he found himself in New Hampshire looking across a blue lake at his dream mountain—the mountain known as Chocorua. Mysteriously half hidden behind a veil of haze tinted by azure skies was the peak of his youth, triumphant above long ridges and lesser heights. To the

Sunrise from the peak—miraculous are the changing lights and colors of this mountain,—now warm shell pink, as the sun comes up out of the east

Kansas youth here was a miracle of beauty, a magnificent challenge to man and an unsurpassed stimulant to the imagination. There behind the filmy screen of summer mist lay the personification of strength, of high ambition and lofty idealism, all culminating in that celestial pyramid, the summit rock.

Soon the day came when he climbed Chocorua—to its very top. His companions were children, happy and quite unconscious that they were symbolically treading life's journey in a few hours. But something in that mountain entered their souls and gripped their hearts, never to be released. For the great spirit of the hill was upon them. At the top, the Kansas youth once again looked out upon a fifty-mile horizon, but this time, instead of the prairie, was peak upon peak, range upon range, climaxed by the crest of Mt. Washington—much the same as he had visioned it from the top of his dream mountain.



A garland of spruces on her breast, for a few moments the wealth of all the Indies sparkles and glistens from the undulations of the gray granite mountain slopes

Years have passed since that first ascent. The little girl who accompanied him has grown to womanhood in full view of the mountain, and long since recorded her hundredth trek to its crest. The little boy practically adopted the mountain. He cut trails, built huts on its shoulders for all-night travelers, and helped to organize the Chocorua Mountain Club.

The youth from Kansas, now well along life's trail, never left the mountain for long, and today is ready to assess it at its true value. He figures not in board feet of lumber, but in the number of feet that have lumbered up its steep ravines and granite stairways; in renewed health, in rested nerves; in a finer sense of Nature's beauty, and in the deep calm felt only in the presence of the great. Wandering over its many trails, sketching its peak from all points of the compass, the mountain to him, as well as to thousands of others, has become the Sinai, the Olympus and the Fujiyama. At every season of the year cameramen, painters and poets stop in the magnificent grove of pines by the lake to record its majesty and beauty in their various media.

What is the mountain worth? The federal government now protects it and no longer are lumbermen to be seen in its forests with scalestick and caliper. There are no rich veins of ore in its rocks, and streams are too small and intermittent to turn millwheels. No hotel on its crest calls for opulent transients, but a hut among the rocks at its foot is open to all—free.

Who will say what a sunrise is worth up there in the dawn? Here is God's transmutation of values: first, the silver of the night with the paling moon and dimming stars changing to amethyst and opal-pink, and then the beaten gold. After this the richness of the sky is spread in lovely glow over the mountain rocks and serried ranks of sable spruce. For a few moments the wealth of all the Indies glistens from the gray granite of the slopes.

When the sun has fairly struck the mountain with its glowing warmth, the forest yields up its richest greens in one great harmony of hues to contrast with dun ledges and gray cliffs. The spruces, dense near the top, are rich with deeper tones; the birch with twisted trunks are of a lighter tint, as are the poplars and aspens on the lower stretches. Pines add still another tonal quality to the forest garment covering the huge shoulders of Chocorua. Let the artist mix his pigments as he will, the charm of this mountain's green covering is beyond his reach.

Loveliness on Chocorua, however, comes not only in the masses and in distant views. The spruces are a continual joy to the artist's eye. In summer their crests are bountifully hung with egg-shaped cones that turn to a deep reddish-brown with the coming of autumn. A study of the granite near the mountain's crest reveals many a tone to give variety to somber gray. Here and there in the deep woods boulders are delightfully spotted with lichens which change with moisture from gray to green in many shades. Some of the mountain trails lead through primeval forests, and here dark trunks rise from eighty to ninety feet before they canopy into burgeoning green.

What shall be said of Chocorua's brooks in early summer before the big hill dries under cloudless skies? The very heart of the mountain is the junction of two streams rising just below the peak and bubbling, dashing and gurgling down the steeps in scores of cataracts ending in crystal clear pools.

From the melting of the snows in spring flowers bedeck the trailsides. Those who know the mountain can find trailing arbutus, painted and deep red trilliums, moosewood, starflowers, lady-slippers, and so on until asters and goldenrod vie with gilded maple leaves in the fall.

What value shall be set upon the mountain? No words were ever devised that would do justice to the richness of Chocorua on an October day when an unobstructed sun draws near the closing hour. Fires of sapphire, glow of gold and beeches of bronze, broken here and there by stretches of shadowed pines, create a pure harmony of hues and tones. Watch the rays of the setting sun on that flaming maple top and you have witnessed as glorious a scene as Nature creates in all the calendar year.

Clouds may not be an integral part of a mountain, but how they adorn the upper heights! The gauzy mists that catch the rose of dawn and swirl round the granite dome have long been emblematic of the spirits that inhabit such celestial crests as Chocorua's horn. A mountain mottled by shifting shadows cast by a fleecy sky becomes a patterned carpet for the gods. Mountain and mist have been companions since the world began. A mountain without clouds would likely be barren of its forests; and clouds without the mountains

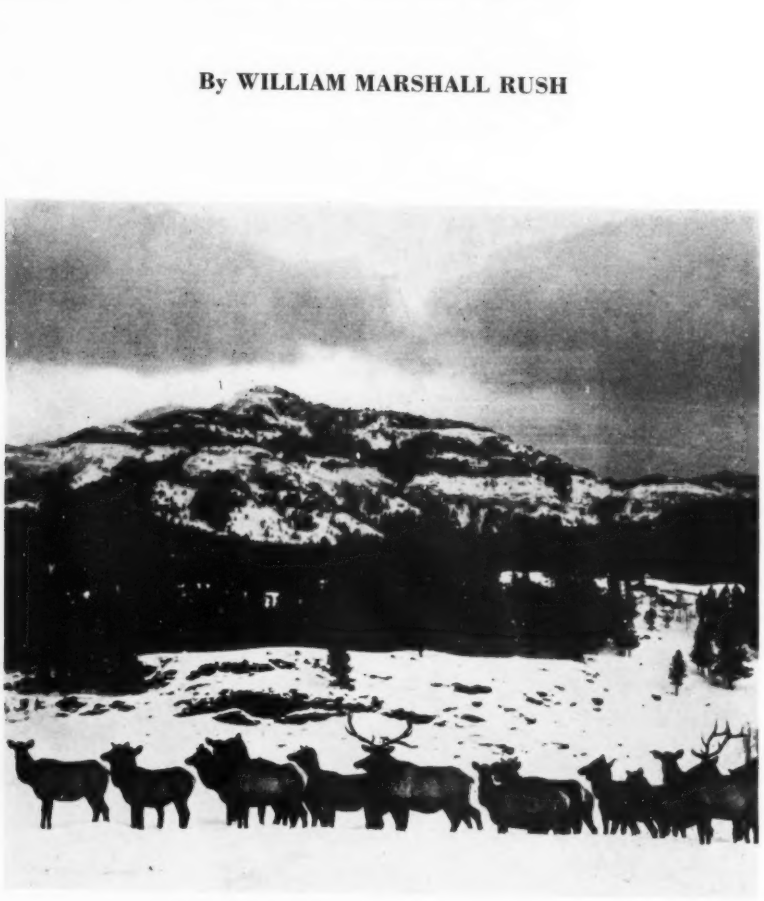
(*Turn to page* 318)

The incarnation of strength is felt in the deep-rooted, colorful trees springing strongly from the granite boulders,—Nature's triumphant answer to all defeatism

TWO-WAY WASTE

How Solve the Yellowstone Elk Problems of Starvation and Ruin of the Range?

By WILLIAM MARSHALL RUSH



Early fall migration to lower country away from high, deeper snow country

A THOUSAND impatient riflemen waited in twenty below zero winds for darkness to fade. They wore heavy woolen clothing and took advantage of every bit of shelter the terrain afforded, trying to escape ice-laden blasts that swept toward the mountains. With loaded guns they huddled behind weathered granite boulders, clumps of heavy sagebrush and in low ravines.

Their quarry came from high, deep snow country a hundred miles to the east and south. They breasted the north wind with heads down, heedless of whatever danger might lie ahead. It would have made no difference had they known of the riflemen. There was no choice. They must press forward, against the storm, straight toward waiting rifles, for beyond those perils lay prairie country, and to their bewildered minds, that meant safety and food.

As daylight came the deployed riflemen moved to more favorable shooting positions. Some lay prone in the snow and steadied their rifles on rocks or sagebrush, not trusting stiffened arms and numbed fingers for that deadly first shot. The quarry came on slowly, doggedly, as if energies were almost spent.

It was hardly light when the first rifle cracked. Hundreds of others echoed it in a deafening roar. For ten minutes rifle fire crackled above the storm. The blood of a thousand ambushed animals stained the snow. The carnage was over.

That is the story of an elk hunt in Montana, at the north gateway to Yellowstone National Park. The same story, with minor variations, could be written for many of the years since the winter of 1909 when the first great migration of elk out of the park took place. Montana hunters killed 3,400 elk in 1942. On New Year's Day, 1938, more than 1,000 were killed on Decker Flats, an area of only four square miles.

"I wouldn't call that a sporting way to hunt elk!" muttered one shooter as he looked around at the carcasses.

A state game warden agreed, "Don't seem so—but if hunters don't take 'em, they starve, and who wants to see 600,000 pounds of good meat go to waste?"

In some years, when the winters were mild, the herds stayed inside their park sanctuary and none were killed. In

1920, however, twenty-eight inches of snow fell in one October night, effectively sealing grass and all other food on the ground. The elk were forced to follow their age-old instinct to migrate to lower levels, to the prairie outside. That year hunters killed them by the thousands. Many more thousands starved to death. The animals that escaped the hunters and reached the prairies found no food. Cattle and sheep had taken it all. During one winter half of the elk herd, then numbering 25,000, died for want of food.

Since 1913 I have lived through many winters in Yellowstone and have seen the pitiful condition of the elk herds. I have counted more than 300 big bull elk in one day's ride, dead of starvation. Calves and cows died by the hundreds. It was a melancholy sight, and so were the gaunt, dispirited animals that moved step by painful step back to their summer ranges after such a winter.

The federal government decided that about half this big herd must be slaughtered during a three year period, part of it within Yellowstone Park, and the excellent venison be sold to the general public. Starting in December of last year, park rangers killed some of the elk and professional butchers cared for the meat. It might be said that our government had gone into the wildlife butcher business. Why should such a step be necessary? And if it is necessary here, what about other big game herds throughout the United States? There is another big elk herd on the south side of Yellowstone Park in Jackson Hole, as large or even larger than the northern herd. What about these animals?

Look for a moment at the history of the northern Yellowstone elk herd. Before the settlement of Montana and Wyoming by cattlemen and sheepmen—roughly, the period from 1870 to 1890—there was almost unlimited pasturage for the elk to share with buffalo, deer, antelope and a few mountain sheep. During dry summers elk wandered into the mountains, but as fall approached they moved back to the prairies where snowfall was light and food plentiful all winter. Indians, trappers, bears, wolves and mountain lions preyed on the herds, but not many elk were killed and the herds held their own.

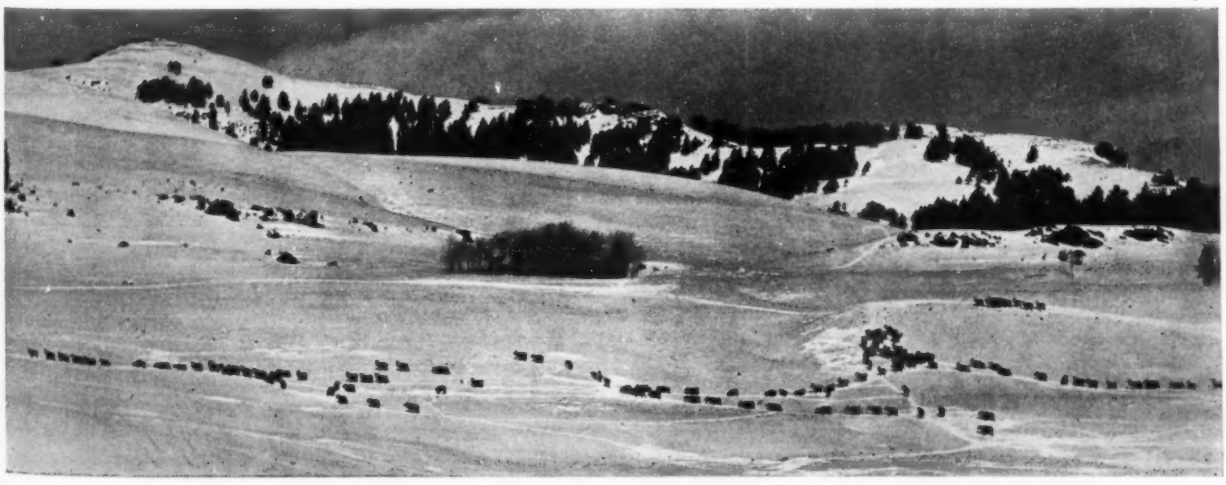
Starvation awaits this bull elk, forced to browse on bark and wood — stubs of young aspen trees

Then the stockmen came with domestic animals. The farmers followed, with plow and barbed wire. Everybody killed elk, not only because it was delicious meat, but because there was so much of it. A big mule-eared deer might dress out around 150 pounds of venison. A large cow elk furnished three times that weight in meat.

Even if the elk hadn't been killed, they would have perished. There was nothing left for them to eat after sheep and cattle had overrun the range. The ground was cropped bare every fall. The elk herds almost disappeared. A few scattered remnants found refuge in Yellowstone Park, where they were protected not only from hunters, but from mountain lions, wolves, and to some extent, bears.

In the park, the small bands prospered. Soon there was a herd of from 30,000 to 40,000. Then came one of those bad winters. Snow fell early. A brief thaw was followed by bitter cold. The snow crusted. All elk forage was securely sealed on the ground. Browse plants such as willows, young aspen trees, mountain maple and service berries were quickly consumed.

The herd, faced with certain starvation in the high mountain country, turned to its ancestral pastures down Yellowstone Valley 100, perhaps 200, miles away. As soon as they stepped across the park boundary they were legitimate game for the hunters who awaited them.



The northern Yellowstone elk herd has outgrown its pasture, and both the herd and the range are suffering. The question is, how to deal with this two-way waste of valuable resources?

In spite of the toll taken by hunters and starvation, the herd continued to increase. Summertime was paradise for the big deer. Little spotted ones were born in May and June, when the mothers found succulent, nutritious food in new growth of grass and weeds. The elk were surfeited with good living, far back at the very fountainheads of creeks and rivers. Their playgrounds were mountain meadows 10,000 feet high, rich in palatable forage.

Few natural checks on the herd remained. The last big wolf in Yellowstone was killed in 1923. The last mountain lion perished before that. Grizzly bears prey on elk calves to some extent, but many of them had been killed off. There was only the take by hunters in Montana and the limited food supply.

This calf, born in a dead aspen grove, faces an uncertain future. It will fare well in summer, but its heritage of winter food is gone

Otherwise the herd multiplied at a rate that doubled its numbers every few years. Two times two times two—the herd grew to an alarming size. In six favorable years it increased from 4,000 to 16,000 animals.

It was bad enough to have large numbers starve to death, but what was even worse, the range began to deteriorate. "Overgrazing" is a term which is becoming more familiar all the time. It means damage to rangelands. Nearly all western ranges are badly overgrazed by domestic stock. A few have been almost ruined by deer and elk.

The first results of overgrazing are not easily recognized unless you know what to look for. Good grass is gradually replaced with plants that are not so good. Excellent feed such as Idaho fescue goes out, and tougher, more unpalatable grasses come in. Pretty soon the slender wheatgrass is crowded out by yellowbush. After ten or fifteen years only the most inferior forage plants will be left. Downy brome, or military grass, has taken over millions of acres of western range. It is practically worthless for winter food. Other noxious plants spring up and flourish because the animals will not eat them.

This replacement of good plants by bad is only the beginning of overgrazing. Soil erosion and complete range ruin is the end result. Good rich topsoil washes away. Clay and gravel are exposed. Grass will not grow on gravel and sheet erosion, as it is called, has ruined many million acres of good grassland. Then comes gully erosion, that ugly monster that disfigures beautiful hillsides and requires costly engineering work, or many years of complete nonuse, to correct.

While grass is being destroyed, browse, or shrub plants, are killed out. Willows are killed by several years of heavy use. So are buffalo-berry, snowberry, certain kinds of ceanothus, and wild rose. Aspen trees, especially the young ones, are eaten—leaves, bark and wood. New aspen grows from the roots of old trees. A few years of heavy use by elk and all that is left to mark the spot where beautiful aspen trees grew, their million leaves trembling even when there was no wind, is an array of skeleton trunks.

The years that the elk moved north down to the prairie helped the range. When the herd stays in the park all year, it further depletes the capacity of the soil to grow grass. It is like a man who cannot live on the interest of his legacy and continually dips into the principal. The less principal the less interest, and the more he must use of the principal, until both vanish.

The elk herd is a stubborn, tenacious thing, resourceful in searching out every blade of dry grass, every twig, every dried leaf. It is adaptable to changing conditions and new sources of food. It eats resinous pine needles, acrid juniper and coarse fibrous plants for the little nourishment to be obtained from them. It lives for as long as a month with scarcely a bite, but all the time it is further depleting its range, which is its principal.

Many solutions to the problem have been proposed. Back about 1925 some eastern philanthropists became so keenly interested that one of them asked if there were anything they could do. There was. They could buy up some of the small ranches north of the park for additional winter range. We could raise hay and feed it to the elk.

The Game Protection Corporation was formed to finance land purchases, hay production, and even to buy carload lots of cottonseed cake for the starving elk. Later the federal government appropriated money for the same purpose.

It was a fine experiment, but it didn't work. Many of the ranches were heavily infested with foxtail grass, which caused sore mouths and an opportunity for a serious bacterial disease, *necrotic stomatitis*, to develop. Then, too, feeding hay quickly taught the big deer to depend on hay. They ceased to be wild, to try to rustle their own food. More elk were lost through feeding hay than would have starved without it. Yet the herd increased rapidly during periods of mild winters.

Three governmental agencies, the National Park Service, the United States Forest Service, and the Montana Fish and Game Department, studied the situation and for thirty years tried out one plan after another. They lengthened hunting seasons to as late as March 1. They tried out boundary lines, beyond which hunters might not go, at varying distances from the park. Certain week days were closed to shooting, in the hope that great bands of elk would cross the line out of park sanctuary and spread into lower country, thus making more reasonable shooting than the slaughter of past years. None of the measures was effective. The herd stayed too big for its available pastures. The authorities knew that it was only common sense to fit the size of the herd to the size of its food supply, but they found it an extremely hard thing to do.

When it was finally proposed that hunters be allowed to go inside park

boundaries to kill their elk, park officials threw up their hands and screamed at the thought of riflemen overrunning that wildlife sanctuary. They maintained, and rightly, that if any park animals had to be killed, it would be done by park personnel. Many rangers were expert riflemen and otherwise better equipped to do the job than the average hunter.

Surplus big game animals have been butchered in Yellowstone before. The buffalo herd is a classic example of practical game management and the pastures used by these shaggy beasts bear eloquent testimony to the soundness of the practice of maintaining a herd comparable in size to its food supply.

A thousand buffalo is the maximum that can be maintained, consistent with the range. Every winter park rangers round up the buffalo and trap them in stout corrals. A count is made and they decide how many animals are to be killed. Buffalo are chosen for butchering because of broken horns, off-color, injured legs, small size and other irregularities. By culling the herd in this way a hardier, more uniform, shaggier and blacker buffalo is produced. And what is more to the point, capital investment in soil, grass and shrubs is kept intact. The buffalo range is ideal, in sharp contrast to the depleted elk range just west of it.

If there were enough summer pasture and winter hay, the buffalo herd could easily be built up to 10,000. It has wisely been held to 1,000. The elk herd should number about 6,000 instead of 12,000 or 20,000. When that reasonable size is reached, hunting will be more sport and capital investment in rangeland will be secure.

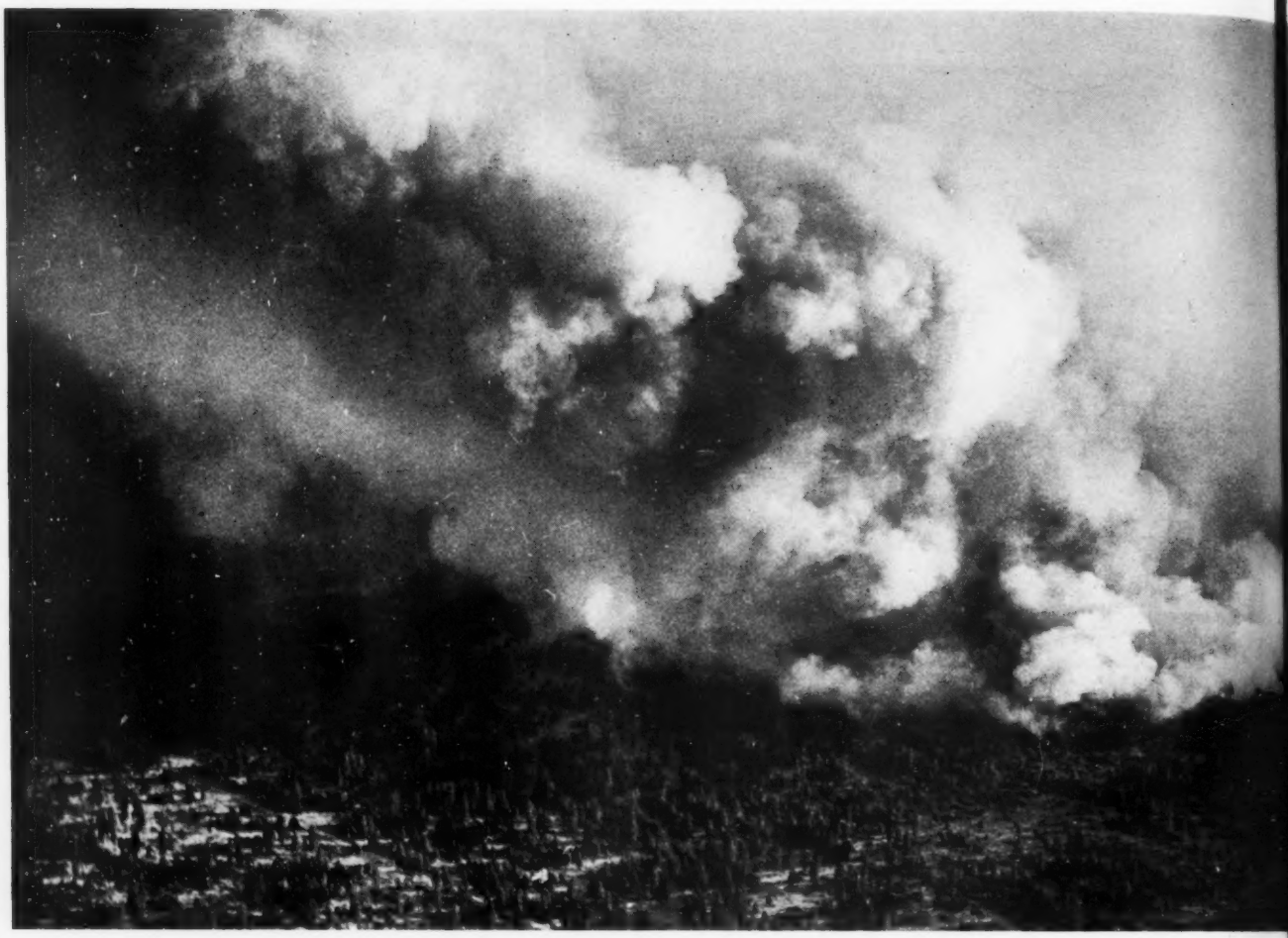
"Pauper" elk, these are called—old bulls waiting for their dole of hay. They no longer try to rustle for themselves

Meat and hides of buffalo slaughtered in Yellowstone are usually donated to various western Indian tribes. Crows, Blackfeet, and Flatheads have had many feasts on the kind of meat that sustained their forefathers and which, but for sensible management by the Park Service, would have disappeared from their diet. During periods of meat shortage last winter, buffalo meat appeared in the markets on the Pacific Coast and was pronounced good by the buyers.

In other parts of the United States a few game herds are managed so that starvation loss and pasture damage are reduced to a minimum. Kaibab deer are managed through regulated hunting. This was accomplished through the cooperation of the State of Arizona and the United States Forest Service. The Pisgah deer herd in North Carolina is another example. There an exact number of deer is killed by hunters each year. Under such a system there will always be deer to kill, because there will always be a food supply for them.

(*Turn to page* 318)

This shows the arrival of the "hay sled," when feeding was first resorted to and which eventually made paupers of the elk



Our record of historic forest fires is dark and shameful. We Americans found a limitless forest—it had no value, and so we burned and burned—from the Atlantic to the Pacific

SOMEONE has said that as a calamity, great fires rank with floods, pestilence, famine, or earthquake—but they are soon forgotten.

To stage a forest fire you need only a few things—a forest, the right atmospheric conditions, and a spark, either from a lightning bolt or a match in the hands of a fool or a knave. The formula is simple; the wonder is that we do not have more and bigger fires. The larger the forest, the drier the air, the bigger the fool, the bigger the fire you will have.

When Europeans first landed on these shores there were surely enough "forests to burn" and the white man began at once to burn them. It has long been the practice to lay the blame for forest fires of early days to the Indians, to prate, with little or no foundation in fact, that the Indians wilfully burned the forests off regularly. The Indian was no fool; he probably knew more about forest fires and the elements than his white brothers did. If the American Indian did all the forest burning he is credited with there would have been few forests left in America when the first settlers landed.

Of course, there were early fires; they are recorded as scars in the hearts of many an American tree. Lightning was here long before even the red man, and with low atmospheric humidity and wind, early fires swept over many portions of our forested regions.

The California big trees show great fires as far back at 245, and again in 1441, in 1580, and 1797. Extensive fires swept Colorado in 1676, 1707, 1722, 1753, and 1781, for her Engelmann spruces still show the scars. Maine white spruces tell of a fire about 1795 which must have covered some 200 square miles.

The pages of European forest history are also blackened here and there with forest smoke. About 1800, there were fires in western Europe, for a part of the Black Forest in Germany was burned. In 1826, extensive forest fires swept over portions of Sweden and Denmark. "Dark Days" are scattered through history, usually due to large forest fires though in some cases to volcanic eruptions. Such days on the Pacific Coast are still fresh in the memories of many of its citizens.

"Red rains," "black rains," and "black snows" are recorded in Europe from 1803 on. But Europe can show no great forest fires, no paltry million acres burned, no holocausts, such as we profligate Americans must admit having. We found a continent wooded; we have hacked and felled and burned the forest back. It was something to be got rid of for, we said, within its depths there might be wild animals and treacherous human enemies; besides we might need the land for crops and homes. The forest was limitless, it had no value, and so we burned and burned, from the Atlantic to the Pacific.

But one day we saw the forests dwindling, we had more cleared land than we were cropping wisely, the forest

HISTORIC FOREST FIRES OF AMERICA

By JOHN D. GUTHRIE

began to have a value for many different things; gradually it became attractive, and then, as mankind is wont to do, we excused our forebears—it was the Indians who used to burn the forests!

Our list of gigantic forest fires is a long one. Their records are stories of appalling loss of real wealth, of the cremation of countless wild creatures, of charred human corpses, a story of roaring thunder, of darkened skies at midday, of blackened and cindered remains of what was forest green.

The details of the early fires which are available to us are meager, but appalling withal. Let's glance over a few, starting in 1825, setting them down in chronological order if not in geographical relation.

The Miramichi fire of October 1825, in Maine and New Brunswick, swept over 3,000,000 acres, and took its toll of 160 human lives.

On the other side of the continent, David Douglas, the young Scottish botanist, exploring in Oregon from 1826 to 1830, speaks in his journal of seeing forest fires near Oregon City and south through the Willamette Valley; the settlers told him the Indians set them, as they told many another scientist and explorer before and since. In 1846 came the Yaquina fire in Oregon, covering 450,000 acres of probably what was as heavy stands of Douglas fir, Sitka spruce, and western cedar as could be found on the Pacific Coast.

Some years later, in the same region came the Nestucca fire on the Oregon coast which is reputed to have covered 320,000 acres. In May 1853, the Pontiac fire in Quebec had burned 1,600,000 acres.

In September 1868 came the Coos fire in the Oregon coast region, when more than 300,000 acres were burned from September 15 to October 20. That same year, in September, occurred the St. Helens fire, which covered over 300,000 acres. "Dark days" were recorded in western Oregon and Washington and smoke was encountered far out in the Pacific Ocean.

Wisconsin now presents a claim for fire fame in the Peshtigo fire of October 1871. This was one of the most calamitous in American history. A total of 1,280,000 acres was burned over, homes, towns, settlements swept away, and 1,500 persons lost their lives. In 1876 the Big Horn fire in Wyoming burned 500,000 acres. Michigan's fire in 1881 is next. A million

The fire is done—no living thing is left

acres were burned, with a property loss of $2,000,000, and 138 people were burned alive.

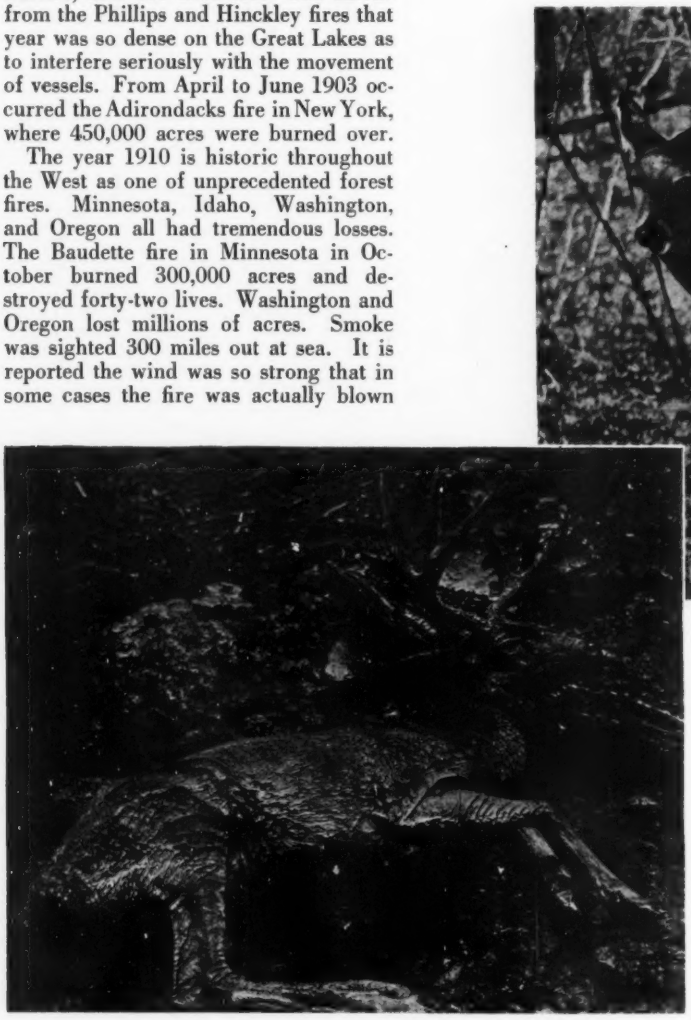
In Wisconsin, also, occurred the Phillips fire of July 1894, when 100,000 acres were burned and more than 300 persons killed. In September of that same year, the great Hinckley forest fire occurred in Minnesota. Millions of acres were laid waste, some twelve towns wiped out, 160,000 acres of forest burned, and 418 lives lost. The smoke from the Phillips and Hinckley fires that year was so dense on the Great Lakes as to interfere seriously with the movement of vessels. From April to June 1903 occurred the Adirondacks fire in New York, where 450,000 acres were burned over.

The year 1910 is historic throughout the West as one of unprecedented forest fires. Minnesota, Idaho, Washington, and Oregon all had tremendous losses. The Baudette fire in Minnesota in October burned 300,000 acres and destroyed forty-two lives. Washington and Oregon lost millions of acres. Smoke was sighted 300 miles out at sea. It is reported the wind was so strong that in some cases the fire was actually blown out. The British ship *Dumfermline* reported the smell of smoke 500 miles west of San Francisco, and a haze interfering with nautical observations for ten days. During August 1910, Idaho suffered worst of all. Two millions of acres of white pine timber were burned, towns were destroyed, and eighty-five lives were snuffed out. Many heroic deeds are recorded.

The year 1910 was unusually dry in Idaho. No spring rains fell. The drought continued through June, July, and August. Dry electrical storms occurred. By July 15 more than 3,000 fire fighters were at work in northern Idaho and northern Montana. By the middle of August over 3,000 small fires had been put out in this territory and about ninety large fires had been brought under control, only to be fanned into flame again by high winds.

Then came Saturday, August 20. That afternoon a hurricane arose. Whole hillsides of timber were uprooted. Forest rangers were almost blown from their saddles. For twenty-four hours the gale raged, and every little smoldering fire in the country was fanned into life. The whole region became a raging torrent of flames, which jumped rivers a quarter of a mile wide. Rangers said the roar sounded like a thousand freight trains passing over that many steel trestles. Seventy-four fire fighters were burned to death. By August 21 a strip of country 120 miles long and twenty to thirty-five miles wide had been burned.

Ranger E. C. Pulaski, with forty-five fire fighters, was caught in a gulch. Fires were coming at them from all sides. Pulaski discovered an old mine tunnel on the mountain side and took his men in, hanging wet blankets over the entrance. Flames swept over the tunnel. Heat, smoke, and gases crept in. Panic seized the men; one started to bolt for the outside. The ranger pulled his gun, saying he would shoot any man trying to leave. Pulaski stood near the entrance until overcome by gas and heat. When he fell exhausted, one of the men took his place until the flames had passed on, and the party emerged after their two-hour rendezvous with death.



The quick and the dead — wild grace of woodland sprite, and — helpless victim of a needless holocaust

While World War I was being fought out to its sudden close in October 1918, the Cloquet fire in Minnesota was staging a miniature war's red hell. A shortage of twenty inches of rainfall in twenty months was the prelude. Somebody didn't put out a cigarette before throwing it away, or a campfire was left unextinguished, or someone was foolish enough to burn brush in such weather. Anyway, the fire started on the afternoon of October 12, the wind came up, and soon Cloquet, a busy sawmill town of 12,000 people, was burned, razed to the ground. All of the inhabitants except seven were rescued, taken out by train to safety, though property and timber valued at $30,000,000 were lost. The city of Duluth was seriously threatened

by this fire. In the fires of that general region, out in the country and in smaller settlements, 400 lives were lost.

And now let's look back to 1902 again at what is variously called the Lewis River fire, the Columbia, Cispus, Yacolt, or Cowlitz fires. There were several fires which broke out that September in southern Washington, as well as in parts of Oregon. All the local conditions were right for any small fire to spread—dry woods, east wind, and many sleeping sparks—from land clearing, brush burning, careless huckleberry pickers, loggers' fires, and other causes. These fires swept from the Kalama River in Cowlitz County, south through Clark and Skamania and east to the Wind River Valley, all in Washington. South of the Columbia River, in Oregon, fires swept from the river southward through Multnomah and Clackamas counties to the Molalla River. The sawmill town of Palmer near Bridal Veil burned. There were fires burning near the settlements of Yacolt, Kalama, Yale, Dole, Skamania, along the North Fork of Lewis River, along the Hoquiam River, and elsewhere. By night the forest skies were red almost from Bellingham, Washington, to Eugene, Oregon.

Here again the atmospheric stage had been set for a conflagration. The fire occurred in September—and it may be remarked that the most destructive fires in the Pacific Northwest have been in September. The summer had been deficient in rainfall. High temperatures, dry air, and light winds for almost four months previously. The earth was parched, crops had failed, vegetation had dried up, down timber and snags were as tinder. High winds from the east ushered in September.

A document in the shameful fire record of 1910, when millions of acres were burned and hundreds of lives lost, from the Pacific to the middle West. This is the mouth of the tunnel in the Idaho hills in which Ranger Pulaski held his men from the raging torrent of flame sweeping over them

Ranger E. C. Pulaski, outstanding hero of the fire of 1910

Fires had been burning near Silver Star Mountain in Clark County for over a month previously; no one paid any attention. Careless settlers were burning slash in many places. Another fire had been burning on Muddy Creek, a tributary of Lewis River.

On September 8 and 9, these fires crept out through a number of gaps in the first range from Washougal to North Fork Lewis, and from then until September 15 the people of Clark and Cowlitz counties did little else but fight fire day and night. September 12 was "a dark day" in western Washington. More than 600,000 acres were burned, the property loss was placed at $12,000,000, and at least thirty-five people were burned to death by these fires in Washington and Oregon.

Along the North Fork of Lewis River the fire on September 11 probably reached its greatest severity. Here a party of eleven people was overtaken by the flames. They had set out to camp at Trout Lake. The narrow road was blocked with fallen timber. The fiery

hurricane closed in around them as they tried to reach Speelyai Creek, less than 100 yards away. Eleven charred corpses lay close together, and nearby a few pieces of iron, all that was left of their wagon. The horses had broken loose, but a shapeless mass and a few buckles told the tale of them. A settler's wife and children were caught as they ran from a clearing into green timber. A mail carrier was overtaken on the road —tried to hide in a small gully, and perished. In all, sixteen lives were lost on the North Fork of Lewis River.

Millions of feet of some of the finest timber in the Northwest were destroyed, and sawmills, logs, railroad ties, settlers' homes, bridges, mining buildings, and countless numbers of wildlife were wiped out.

Many carcasses of deer were found afterward, while the loss of smaller game such as grouse, squirrels, and rabbits was great. In one wet meadow some people took refuge; there, also, were six bear, eight deer, and a lynx. In a clearing where several families took shelter, a number of deer came and sought refuge with them. As food supplies became low, one of the men had to shoot one of the deer. He said afterward that he would much rather have stolen that much food than to have had to kill the deer—he felt almost as if he were killing a brother!

It was from these fires, however, that organized forest fire protection agencies in the Pacific Northwest date their origins. They aroused timber owners, logging operators, foresters, and others to such an extent that legislative steps toward protection of the forests followed soon after. And then various organizations to prevent and combat forest fires came into being.

Among spectacular fires of recent years was the Matilja Canyon fire of September 1932, on the Santa Barbara National Forest, California. This fire spread over an area thirty-two miles long and eight miles wide, covering some 220,000 acres.

The fire was disastrous to watersheds of eight towns and cities and also to important irrigated lands. A total of 2,500 men fought this fire, of whom 105 were forest officers working from seventeen fire camps. Twelve of these camps could be reached only by packtrain and three of them were burned up. Five portable radios and two airplanes were used on this fire. There were dug 302 miles of fire lines. While there were no human fatalities, the loss of deer and quail was very heavy; eleven carcasses of deer were found in one spot and twelve along a trail.

The big Wilson River or Tillamook fire of August 1933, in Oregon, was even more spectacular. Dry woods and east winds were the setting when fire from friction of a steel cable passing around a stump started it off in slash nearby. Discovered almost immediately and attacked by a logging crew, yet with dryness and high winds, it fanned over the cut-over and by the end of the second day nearly 600 men were on the fire line.

Then came a five-day fog and things looked better; but again very low humidity and high east winds, and the fire roared over the Oregon coast, through the finest stand of virgin timber remaining in the state.

The net area burned over in eleven days was 245,000 acres, over two-thirds virgin timber, estimated to contain ten billion board feet, with an estimated loss to industry and the public of $350,000,000. The stumpage value alone of the timber destroyed was $20,000,000. The amount of virgin timber burned was equal to the entire timber cut of the United States in 1932, or eight or nine times more than the entire cut of the Douglas fir region for 1932.

Over 1,500 men fought this fire, in-

(*Turn to page* 316)

The Blackwater fire, in Wyoming, in 1937 took a terrible toll of human life. Near this spot, despite heroic efforts to save them, fifteen men made the supreme sacrifice

Editorial

Pressure on the Parks

AS THE spring advances, increasing pressure is being directed upon the National Park Service to open the national park system to the grazing of sheep and cattle. The pressure arises from a representation that the parks contain a great amount of unused forage which ought to be utilized during the war emergency to increase the production of livestock and the meat supply of the nation. That at least is the basis of a growing campaign to open to grazing the national parks, national monuments and other areas which make up the over-all park system. Latest development in this direction is a memorial to Congress passed by the State Senate of California asking that the forage resources of the national parks of that state be made available to livestock producers.

In this situation, there may be in the making a crucial test of the long-standing national park principle that these areas are for total preservation of their natural resources and scenic environments and that grazing and other commercial uses are expressly to be excluded. This principle has been so long and universally established that pressure now to break it down in the name of war needs will be a confusing shock to many people. A war for national survival such as the present one demands sacrifices and the setting aside of principles and programs long cherished as sacred. It may appear realistic and logical, therefore, that if we are sacrificing our young manhood to win the war, we should not hesitate to sacrifice temporarily national park principles in order to provide meat for winning the war.

The question, however, is not so simply resolved because according to a recent statement issued by the National Park Service, the amount of forage in the national parks is an almost negligible item in the over-all forage supply. Recent studies by the Service of all lands under its administration, it is stated, show that the total area suitable for grazing would amount only to one-seventh of one percent of the total grazing lands in the United States. This being true it would appear that exaggerated emphasis is being placed upon the contributions which national park forage could make towards increased livestock production. On this showing, many will wonder if certain elements of the livestock industry are not using the war as a pry to get their noses under the national park tent.

In any event, Secretary Ickes of the Interior Department does not see eye to eye with these proponents. He has taken occasion to reaffirm the "no grazing" policy for national parks which means for the time being at least that there will be no extension of grazing in these sanctuaries of nature. On the other hand, he indicates that there are some types of federal reservation under administration by the Park Service, such as recreational, historical and parkway areas where some extension of grazing may be permitted.

Negligible though the supply of forage in the national parks appears to be, the effects of grazing in areas dedicated to the preservation of the nation's greatest examples of nature may be in reverse proportions. Many conservationists have not forgotten what happened in World War I when under similar pressure for increased livestock production, both the national parks and the national forests were forced open to heavier and more extensive grazing. The action not only failed to increase the meat supply but it proved disastrous to over-stocked ranges, many of which have not recovered to this date.

Most stockmen have since learned that over-stocking public ranges does not pay, that instead it reduces the carrying capacity of the ranges and fails to increase the production of meat. This explains no doubt why so far in this war, pressure for increasing the number of livestock on national forest ranges has not developed. The national parks, however, are in a different category in that most of their areas have not been grazed and therefore offer virgin fields in which over-grazing, stockmen hold, could be guarded against.

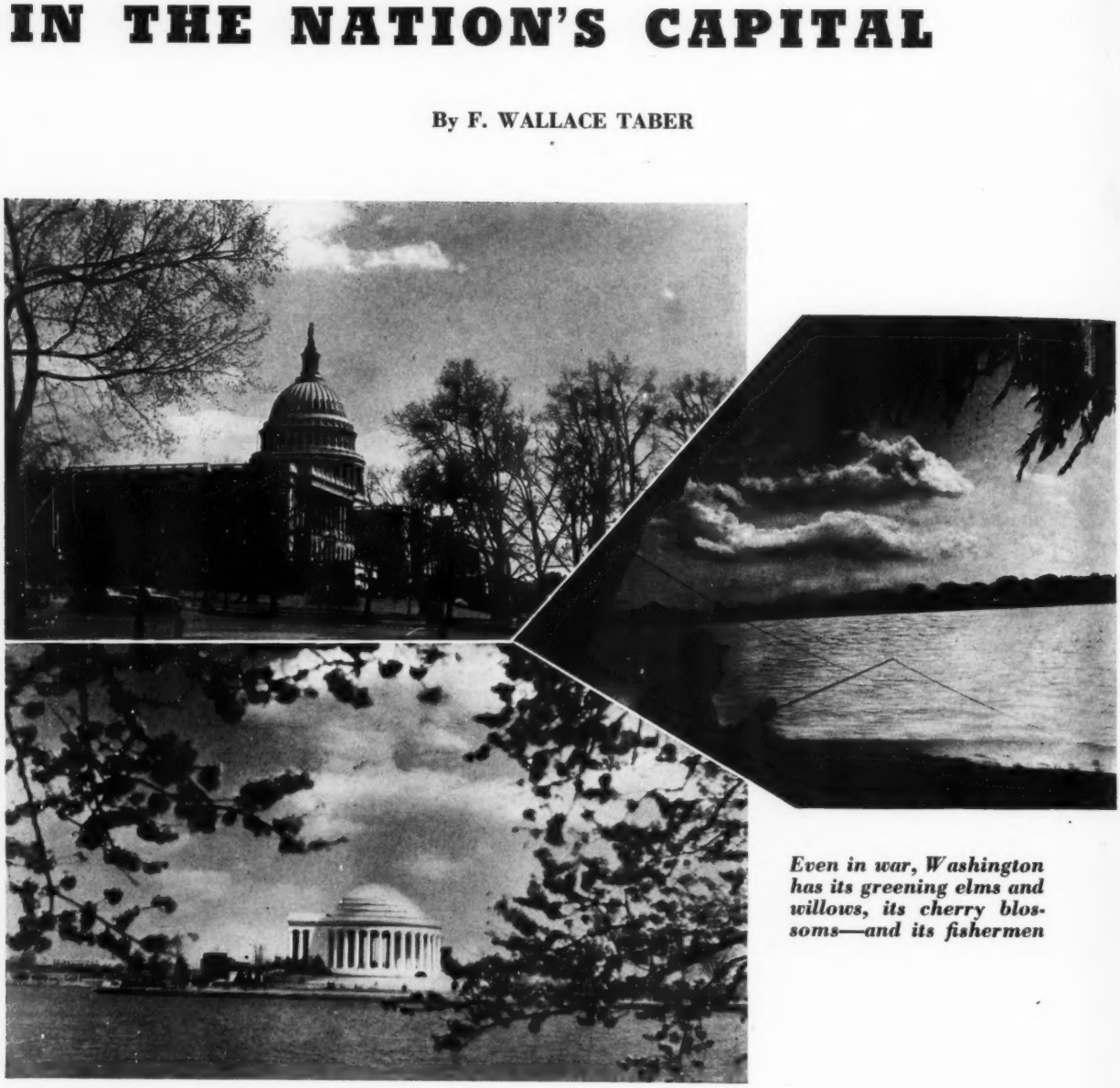
The fact, however, that the national parks for the most part offer virgin fields for grazing, lumbering, mining and other economic uses goes to the heart of the question. They are virgin fields because the people of the United States have willed that they be set aside and so kept as the nation's best examples of undisturbed nature for the education, enjoyment and inspiration of all the people. Even light grazing would destroy this basic purpose and start the parks on the down road to general economic exploitation. As experience clearly shows, these uses would in the course of time alter natural conditions of fauna and flora and the whole primeval environment which the park was created to protect and preserve. Balancing these considerations against the negligible contributions which the parks might make in the way of additional range, the campaign to stock them with cattle and sheep does not seem to be an issue of much moment in the winning of the war.

The situation nevertheless brings home a question that has long called for square facing, because it is fundamental to maintenance of the national park principle both in time of war and in time of peace. In years past, this Association has cautioned against and opposed inclusion in park boundaries of larger areas than are necessary to set apart the natural phenomena which warrant complete preservation. By this course, the park system inevitably builds up store-houses of natural resources not necessary to the preservation of the natural features they were created to safeguard. It follows that in times of economic stress, these locked-up surpluses invite just such pressures as the present one for park forage and the one mentioned in previous issues of this magazine for the extensive areas of Sitka spruce that were included in the Olympic National Park.

In the past ten or fifteen years, the national park policy has, we think, been dominated too much by over-inclusion of extraneous areas and economic resources — a policy which courts the leveling off and eventual destruction of the whole fine purpose of national parks. It is to be hoped that when peace returns those who have been wont to acclaim park progress in terms of quantity rather than quality of land features reserved will have awakened to the danger inherent in such a policy.

BLACKOUT BASS IN THE NATION'S CAPITAL

By F. WALLACE TABER



Even in war, Washington has its greening elms and willows, its cherry blossoms—and its fishermen

IT was Sunday in Washington and, for the first week-end in months, the bite of winter had been completely overpowered by the breath of spring. Needless to say, the parks on the banks of the historic Potomac River were flooded with people—mostly war workers seeking a few hours of relaxation beneath the greening willows and first bloom of the Capital City's famous cherry trees. It was a gay spectacle, a variegated array of color, a scene to overawe almost anyone. But to old Joe it didn't hold the slightest bit of attraction.

"Fishin' is about all ah cares about, and ah reckon as to how fishin' is the mostest thing they want the leastest of."

Old Joe happens to be colored, which, as he puts it, "'Twasn't none of mah doin'." To him the passing parade held no attraction whatsoever. The towering Washington Monument rearing its gigantic granite buttress 555 feet into the sky directly behind him, the muchly publicized "Japanese" cherry blossoms lining the Tidal Basin, just south of the White House, the spacious memorial housing the awe-inspiring figure of Lincoln, the glistening, white columned tribute to the Unknown Soldier, the dazzling, domed Jefferson Memorial and a thousand other wonders within his immediate vision were all but forgotten as he watched the "bobbin" tip ever so slightly, rock back, bob and then disappear beneath the muddy surface of the Potomac.

"Cawp," ejaculated Joe, jerking his hand line in a most business-like manner. "Cawp, mostly, but they'se a heap of hawnpout and some channel cats."

"Hawnpout," I later learned as Joe took one from the rusty hook, is just another name for a bullhead or mud cat.

Interest aroused, I asked if there were

any game fish to be caught in the Tidal Basin, around Haines Point across from the War College, or for that matter anywhere within a few miles up or down the river.

"Game fish?" He squinted into the first bright sun of the year to look up at me from his reclining position on the park lawn. "Game fish? Meanin' bass 'n perch?"

"That's what I mean," I told old Joe who was right then more interested in his 'bobbin' which was doing a jig in the choppy waters. "Bass, crappie, sunfish—any of them around here?"

"Jest a scad," came the reply as the second hawnpout, one of about two pounds, came flopping over the cement retaining wall to receive the *coup de grace* in no uncertain manner. "A heap of them. Why, right over yonder by that gate."

* * * * *

"Right over yonder by that gate," I told Ed as he maneuvered the canoe with a dexterity born of fifteen seasons in Minnesota's Lake-of-the-Woods country. "Right over there is the place ole Joe said we'd hook 'em. Can you imagine, he'd rather bait fish for 'hawnpout' and 'cawp' than waste all his time catching bass and crappie—too slow! Oh well, if what he said about those two pound crappie and five pound bass is true, we should kick about his not caring to bother with all the waiting involved."

"Wonder what President Jefferson would say about our parking on the steps of his memorial and bug-casting for bass during a twentieth century blackout?"

"I can't think of a better way to spend a blackout," glibly retorted Ed, feathering the paddle and reaching for another silent stroke. "We didn't use an ounce of gas or rubber, and we're saving electricity at home."

"Funny the way the streetcar conductor asked, 'Headin' for Maine?' Come to think of it, we did present quite a contrast with these clothes. Oh well, all in a night's fishing. I—." Off to the right and a bit in the lead a loud splash interrupted my chatter. And then another!

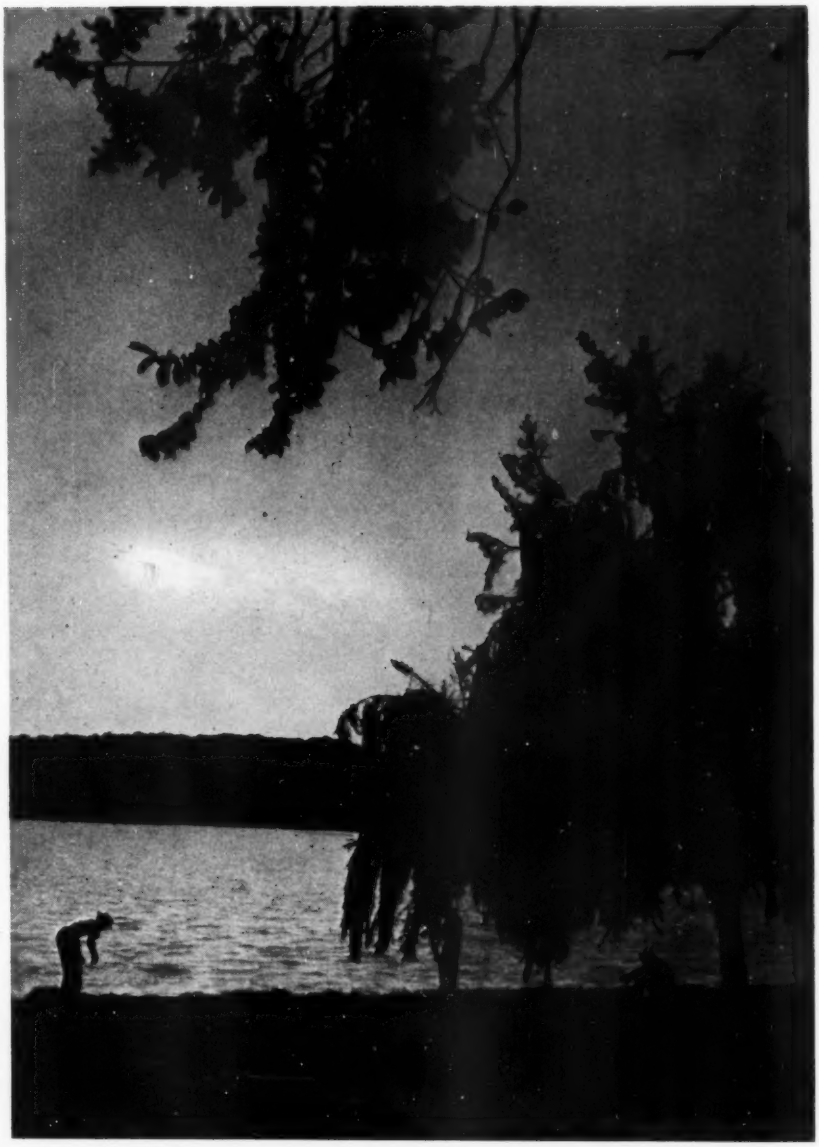
"Too dark to see," whispered Ed, "but I'll wager you ten-to-one that it isn't beaver."

"Wise guy," I retorted. "My guess is fish, and now to find whether its 'cawp' or not 'cawp'."

"Try that balsam bug you whittled out last week," Ed directed. "If it doesn't frighten him to death with those goggle eyes and bristly mustache, it might overcome his better judgment."

Hastily I dug for the latest creation in popping bugs, punched the celluloid cement out of the hook's eye with a corsage pin long ago borrowed from my wife's effects, and proceeded to secure the nylon with a desire to make it stay

(*Turn to page* 301)



Within streetcar distance, the historic Potomac and the cherry-lined Tidal Basin, lure hundreds of fishermen

A fighting bass—and almost in the President's back yard

PINES WITH V-FACES

New Process Speeds Up Naval Stores Production for War

By RUTH MOORE

Trees such as these—longleaf pines of the coastal South—are producing more and more naval stores for the war effort

DOUGHBOYS in khaki aren't the only ones wearing service stripes these days. If you take a look into the pine forests anywhere from North Carolina to Florida and around the Gulf Coast to Texas, you'll find millions of silent tree soldiers flaunting their service symbols. These pines of the South will not be awarded Purple Heart medals for their battle wounds, but they're bleeding for Uncle Sam.

When the Treasury Department said, "We must have more money to win the war," citizens invested millions in bonds. And when the Army and Navy announced their vital need for rosin and turpentine, the tree soldiers of the forest suffered new wounds, increasing naval stores production to supply this vital need.

Back in the seventeenth century, the tar and pitch obtained from crude gum-resin by boiling in open pots was used mainly for calking ship hulls and tarring ropes. Hence the name "naval stores." But since that time, with the discovery that pine resin could be separated into rosin and turpentine under distillation, its uses have multiplied a hundred-fold.

Most people are familiar with rosin as a hard amber-colored substance which violinists use on their bows. They know that turpentine is a high-grade paint thinner. But the average man-in-the-street doesn't realize that naval stores go into a score of other products, including paper, roofing, printing ink, soap, pharmaceuticals, perfume, plastics, shoe polish, matches, synthetic camphor, adhesives—even bedbug exterminators and sheep dip.

And right now the war has found many new uses for naval stores. To mention just a few: rosin is used in making shatter-proof glass for bomber-plane noses, in the rotproofing of tent fabrics, as a binder in shrapnel, as bedding for live shells, as a substitute for arsenates, as insulation in ship construction, in smoke-screens used by the Navy, and as a substitute for fats in soap.

With orders like that to fill, the pine trees along the Atlantic seaboard began to churn up sap in earnest. Prior to this year, they'd had a fairly leisurely existence. The demand wasn't too great; there had even been huge surpluses in some years when warehouses were near to bursting. But now, with surpluses being heavily drawn upon to meet increasing war needs, Uncle Sam gave the command and the trees, like the seasoned troopers they are, came through.

The man responsible for tapping the new flow of gum-resin is T. A. Liefeld, of the United States Forest Service. Back in 1937 he got wind of a secret German method for increasing tree out-

put. Quietly and without fanfare, he went to work at the Olustee Experimental Forest in Florida. Result: the Germans no longer have a secret and Uncle Sam will have enough naval stores not only for his own needs but for his lend-lease neighbors as well.

Liefeld and his associates discovered that a forty percent solution of sulphuric acid applied to fresh "streaks" chipped in the "faces" of slash pine worked like magic. A half thimbleful of the stuff, sprayed or brushed on, woke up the sluggish resin, stimulated it by fifty-five percent. The longleaf pines were more stubborn. But the tree doctors eventually found that by increasing the sulphuric acid content to around sixty percent, this species likewise yielded a greater flow.

Don't worry about the trees. Like all good soldiers, they can take it. When you give a pint of blood to the Red Cross, it doesn't affect your health. Neither does the giving up of extra gum via artificial stimulation affect the stamina of the tree.

But many of the gum farmers along the hundred-mile-wide pine belt of the Southern coastal plains were incredulous at first. They and their forefathers had been "bleeding" trees for three centuries or more and they couldn't be convinced these new-fangled ideas would work. You'd spend a lot of money getting additional labor and new tools, they argued, and where would you be? Maybe you'd get a heavy crop one season, but you'd be left with a lot of dead trees the next!

Liefeld and his men were undaunted. Representatives were sent from North Carolina to Florida demonstrating the workings of the new acid stimulation. Finally their efforts were rewarded. A goodly portion of the gum farmers agreed to try it. Those that were still skeptical last season have since had a change of heart after seeing neighbor yields, plus the handsome additional revenue.

There's a great bustle of activity every spring when the turpentine season gets under way. The pine trees in the swamps and submarginal lands that had stood quietly all winter, patiently building up fresh reserves, are suddenly called into action. The forests which had been unmolested by man are now full of the sound of the chipper's "hack," the rattle of "dip" buckets, and the creaking of woodswagons.

This spring there's been more excitement than usual. Even the tall pine trees seemed to share the wonder of this season as the tree expert explained to Charlie King, negro chipper, about the magic solution. Charlie, who has been chipping faces for twenty years, stands by in awe as the cups attached to the tree-trunks fill to over-flowing in half the normal time. He pushes back his battered cap.

"Tree, ah salutes you," he says, looking with admiration at the gallant tree that has met war's emergency with a burst of energy.

For the most part, Charlie works alone, covering his own area, visiting the same trees year after year. He knows each tree intimately, having made the first base cut, or the "lead streak," in its trunk. Successively through the producing life of the tree, he has cut new streaks with his faithful hack. When one of the older trees reaches the end of its resin, he feels almost as bad as if he'd lost a friend.

He can't remember who taught him his trade. He claims that he was born with it. And if you saw him at work in the woods, you'd be inclined to think he was right. Because he works with an almost instinctive sensitivity, knowing precisely how deep to cut a new face, how shallow to slash an old one.

The dippers follow after him, pouring the gum from the cups into small

By applying sulphuric acid to the streaks being chipped in the pine, a fifty percent increase in gum is obtained

wooden buckets and thence into barrels for transport to the local still. When these barrels, stationed at intervals alongside the forest trails, are filled with gum, the woods-wagon driver rolls them onto his mule-drawn cart and jolts over the sandy roads to the still, usually a crude two-floored structure pungent with the odor of pine gum. The still hands receive the crude resin on the second floor, or more properly a roofed-over platform, and when the stiller gives them the signal to "charge" they pour it into the maw of the copper still.

Ten barrels at a time, four times a day, the crude gum resin goes into the still, where it boils and bubbles while the pine gum vapor condenses into turpentine. When it has cooked long enough, the stiller opens the sluice gates and the rosin rushes out into waiting vats. There it is strained through two layers of wire and one of cotton batting placed over still finer wire. While it is molten the rosin is ladled into barrels where it solidifies when cool.

Like Charlie the Chipper, the stiller is an old and expert hand. He can tell by the sound of the breaking bubbles whether a charge is done. And he knows his charges by name, all the way from B to X. If he mutters, as he looks into the hot rosin smouldering in the vats, something about "Betsy" or "Kate," you may be sure that those are two of his pet names for the color of the rosin in a particular charge. They run from the lowest grade and nearly black Betsy through Dolly, George, Isaac, Kate, Nancy, Window Glass, Water White, to the finest grade of all, the very pale amber Extra.

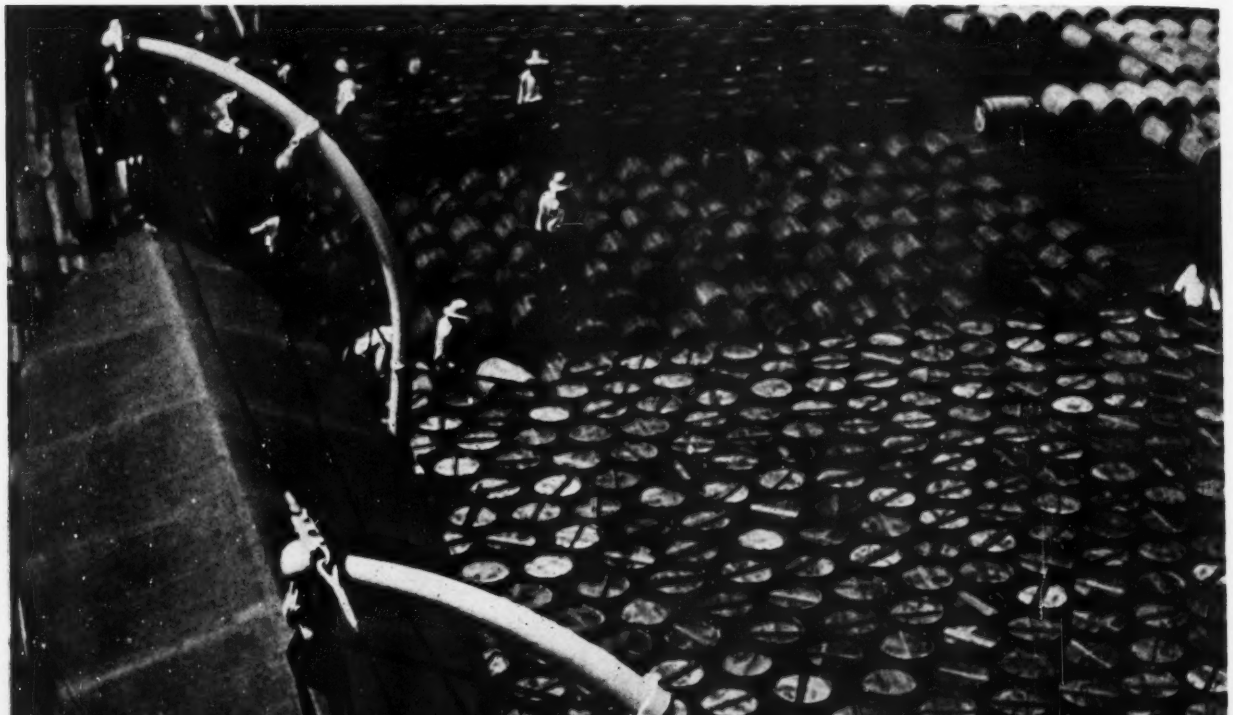
With the exception of the stillers and the truck-drivers who carry the finished rosin and turpentine to the docks for shipment, the workers are mostly negroes. The chippers, the dippers, the coopers who make the barrels, and the stillhands number more than 50,000.

Despite the fact that it is one of the South's basic industries and until the war, produced more than half the world's supply of rosin and turpentine, the naval stores industry is still rather primitive in its basic techniques. As a matter of fact, there weren't a great many improvements over its seventeenth century counterpart until Dr. Charles Herty appeared on the scene at the turn of the century and pioneered the way to improved chipping and cupping methods.

He gave impetus to the movement which led to the establishment of something radically new in the antiquated naval stores industry: the steam distillation of turpentine and rosin from stump discards.

It looks as if the new methods introduced by the Forest Service are marking the next forward step in the progress of this unique industry. War's demand has stepped up production, and tools, equipment and technique must keep pace.

These scarred veterans have proved that they can take it. The V-shaped slashes in their barks have now become more than the source of gum-resin. They have become symbols for Victory.



War demands rosin—in shatter-proof glass, in smoke screens, in binders for shrapnel—and the pines of the South are supplying it. Here, at a southern port, barrels of rosin await shipment

Blackout Bass in the Nation's Capital

(*From page* 297)

tied. A few false casts to get some distance and I dropped the bug in the inky blackness forty feet beyond. A few twitches produced a gurgling sound as the bug dove, returned to the surface, dove, returned and then sat still, seemingly to catch its breath.

"Let it ride," suggested Ed, rather alarmed that I should not have done so in the first place. "That's the only way to get those big babies. They're probably so used to ducking rocks slung at them by the kids that line the Basin all day that they would never suspect a splash as indicating food. They'll come back from force of habit though, just to see what made the splash. Then, if your bug is still in the center of those spreading rings, 'nuf said."

"I suppose you're right," I sheepishly admitted, having previously told Ed that I was a bass fisherman from away back. "I was just limbering up the rod and getting a few kinks out of the line preliminary to striking a big bass silly. I suppose they do have about as much privacy as a gold fish in a —"

Whaam! Something hit the bug with force enough to unseat Lancelot. And, whaam!—I jerked the rod like I was fishing for tuna off the Coronados. And, whaam!—the bug hit me in the middle of the chest with a thud that drowned out even Ed's husky guffaw.

"Hold the danged canoe steady," I cautioned Ed, fishing for an excuse for missing what certainly was the granddaddy of all Tidal Basin bass. With sufficient chagrin to charge a 75-millimeter cannon, I began untangling myself from the coils of line that had settled from head to foot.

"Nice try," Ed chided. "Have at him again. He's got two more strikes before he's out!"

Then, while I tried to ease my singed pride, he went on: "It's a wonder you didn't swamp us with those tuna tactics. I don't think you even nicked him, so chances are he's nosing around down there right now trying to decide what sort of illusion he thought he was about to swallow."

The second cast went out a few feet farther than the first, and from the dim outline against the white marble mass of the Jefferson Memorial it looked as though I had snaked the bug in under one of the overhanging cherry trees.

This time there wasn't even opportunity for me to give my preferred initial twitches. No sooner had the bug rippled the surface than the water surged with an upheaval rivaling a breaking porpoise. The granite retaining walls echoed the splash against the Memorial, and the Memorial bounced it back full blast at us.

"Tie into him," urged Ed, driving from the back seat again. "Give him the works."

I had my hands full with a fly rod that refused to undouble and a line that swished at a dizzy clip through the water. Then the surface broke again with a splash dwarfing the first. This time it was followed almost immediately by another, but the black night dimmed the leaping beauty and we could but guess as to its size and description.

"Nothing in this Basin short of a bass knows that trick," wagered Ed, who had forgotten all about paddling in his rush to join the fray. "Got another one of those bugs in your box?"

"Forget about bugs right now. Where's that net? Can't you see I've got my hands full? Where's the net?"

Ordinarily I'm not overly excitable, but the prospect of bug-fishing for big mouths within street-car distance of home and not over a stone's throw from the White House, was just too much for me.

"There, there, take it easy, pal. Everything is well under control—except you. Just worry about bringing that baby within reaching distance and I'll handle this end of the beaching," joshed Ed in his usual jocularity.

The first jump had convinced us that the hook had set in business fashion. That fish had cleared the water like a western doggie raked with the roels, and the six-ounce bamboo responded like a veteran. Out from under the spreading cherry tree and into deep water the fish finned its speedy way, necessitating a swing around the end of the canoe.

"Easy does it," cautioned Ed as he dipped the net beneath the surface to await the tiring fish. "And don't forget that this is a trout net, not a yellowtail gaff. Bring him in a bit closer."

Ed was the only one who could kid me about my southern California ocean fishing and get away with it. He had never seen an ocean—no salt water at all. Musky, trout and bass had been his scope, and Lake-of-the-Woods his cradle. Nevertheless, Ed knew his fishing from trout line to fly rod, and night fishing was an old pet with him.

"There you are, pal," exclaimed Ed as he eased the net beneath the shining beauty. "Turn that carbide up a bit—there! Nothing wrong with that baby. He'll tip the scales at three and one-half pounds or I'm a monkey's uncle. And, by golly, it's a big-mouth bass—first fish I've caught since I left home last September."

"First *you've* caught," I exclaimed. "Why you lop-eared Minnesota Swede, all you did was paddle the boat!"

"That so? Well, here's the paddle, make yourself useful and I'll show you how we do it up along the border. How about a twin brother to that bug?"

Ed's first cast was a beautiful piece of rodmanship for an old salt to behold. Oh, I'd done a bit of fresh-water fishing, but there just weren't an awful lot of lakes in San Diego County out in California—not when compared with Ed's Arrowhead country up Minnesota way. Both of us had drifted back to the Nation's Capital with the outbreak of war, and neither of us knew a thing about fishing waters in the District of Columbia. Our misgivings were vanishing rapidly, however.

Ed cursed softly after missing a strike.

"That makes us even, Uglier-than-I," I passed no opportunity to repay the kidding of a few moments previous.

"You've got the hook set too far forward—ought to hang out behind a bit," suggested Ed as he snaked out a strand of line that I remember vividly to this moment. He curved the bug close up against the retaining wall where the last one had made the lunge—and a beautiful curve it was. The bug rested right where it had fallen. Ripples ringed out from it, spread and finally disappeared, but still the bug remained motionless.

"What are you trying to do, hatch it?"

In reply Ed gave the rod tip a slight twitch and the bug responded in kind. Then it happened! He leaned back with his wrist and his rod described a beautiful arc, practically framing the entire Jefferson Memorial from where I watched.

Out near the wall a glistening beauty bounced into the air, shook desperately and pulled leather beneath the surface to buck in its own medium from there on out—bedlam unleashed. At first Ed kept the line snubbed in tight, but after the first leap, he played out a bit to the racing fish. A few seconds later, this time on the opposite side of the canoe, the fish jumped again.

"He's over there on the other side," I chided.

"So you think—mine's still in the shallows up by the wall. Must be another one—give him a rain check!"

Five minutes and three jumps later I netted Ed's bass which was every bit the equal of mine if not slightly heavier. Without waiting even to string it, Ed dropped his bug on the other side of the boat out in the proximity of the last splash.

"Pass up the stringer and I'll lace the

(*Turn to page* 317)

YOUR SHADE TREES

Trees For Your Garden

By O. H. STUDE

Evergreens have a thousand garden uses

GARDENS, large or small, will have a new meaning this spring and summer. To them, more than anything else, we must turn for relaxation and for the spiritual quality of growing things. Speckle-throated lilies, for instance, or blue asters, ruffled hollyhocks, or golden chrysanthemums. And, of course, trees.

For trees, since time immemorial, have been admired for their charm and beauty. They are as much a part of a garden as multicolored flowers. They are lasting, adaptable, friendly. They are easy to obtain in congenial variety. As a rule, they are readily transplanted or easily multiplied through seeds and cuttings. They require less care and generally stand more neglect than a great number of their ornamental relations.

Because they are lasting — often through several generations — garden trees should be selected with great care. Some specimens, such as the oaks, are chiefly valuable for their passive charm and patient beauty; others contribute shade; still others are desired for their spring bloom, or for their autumn color. And just as there are garden trees for spring, summer and fall, so are there trees for the bleak winter months. The wise gardener will arrange and group his trees for year round service, with emphasis on those species which appeal strongly to his own needs and taste.

Climate, soil and size of the garden are, of course, fundamental considerations. A gardener in California will think in terms of trees wholly inadequate for his cousin in Pennsylvania. The tree approach to a small garden differs from that of a large estate. Nevertheless, before a tree plan for either large or small garden can be intelligently developed, the gardener must know what trees he can work with.

Lombardy poplars formalize the garden, lending character and dignity to the simplest treatment

Assuming that he lives in the eastern half of the country, his deliberations may well begin with the oaks, for here are trees of many delights, of rare charm and gay autumnal colors. There are a number to select from, beginning with the white oak, a gardener's favorite down through the years. At maturity its wide-spreading crown of heavy branches, its profusion of leathery leaves, and its strong trunk are unrivaled; even young trees of this species have excellent qualities. Red oak is almost as picturesque, and its greenery, sometimes lightly flecked with red, is a deeper shade. It flourishes in a variety of garden soils. Black oak displays a deep green verdure against a lighter background, and the pin oak, a tall columnar tree, deeply cut papery leaves, that redden in the fall.

To shade or dress up the garden, Nature has designed such deciduous trees as the weeping willow, which puts out the cascading green foliage frequently seen along winding streams or on the edge of tranquil pools or lily ponds. Lombardy poplar comes up advantageously in places where tall spires or massing is desirable.

Another exotic tree, for the Lombardy is not native, desirable in the garden is the ginkgo, sometimes called the maidenhair tree, a strange, unfathomable native of the Orient. Its curious confetti-like blades dangle on long stems in clusters of three or more. Perhaps even more

Above—Banked flower groups around a lovely garden pool, accented by massed evergreens and, above, the cascading green beauty of a weeping willow tree. Below—Shimmering white birch, — "Lady of the Woods" — graces the lawn above a sunken garden in magnolia time

fascinating is the growth of shallow-rooted European larch, loosely formed like fur, which prospers in porous soil and clusters soft green needles on small spurs along its gently drooping branches. Or regal *Paulownia tomentosa*, known as the Princess tree,—also from the Orient, a brownish gray tree, broad and irregular, holding out exceptionally large heart-shaped leaves, that associate well with woodland scenes or flagstones. In May, the royal paulownia exhibits large panicles of trumpet-shaped, lavender flowers, usually before the leaves appear.

With large trees, lustrous flowers are often not wanting, horsechestnut, tuliptrees, and black locust bearing among the best. Flourishing in moist, fertile soil, the horsechestnut, especially heavily leafed and tall, fully blossoms at the end of April, revealing innumerable delicately curled flowers massed in countless white racemes standing upright, like wax candles, on the end of branches. The flowers of black locust, on the other hand, come out in mid-May, myriads of white blossoms, resembling sweet peas, appearing on the tree, hanging in grape-like clusters among its feathery blue-green leaves. Those of the tuliptree appear at the end of May, greenish cups invested with orange or yellow hues coming to sight on firm stems settled in between the blunt, green foliage. The succession of flowers of different combinations of trees in similar locations is always the same, but latitude determines the approximate time for their appearance.

By using these and other colorful trees, it is possible to enhance the beauty of the estate at all seasons. For the winter scene, white birch and other members of its family may be planted in front of evergreens and in woodland settings near pools or streams. The weeping variety, in groups or as individuals, is particularly outstanding, the white sections of its banded trunk being of unusually creamy or chalky texture. In February or March, before new leaves appear, birch trees profitably mingle with diminutive crocuses on the ground naturalized in white or yellow flocks.

Particularly colorful trees in winter also include the oriental plane, a loosely knit, spreading tree, whose mottled bark adds tints of grey, yellow, or brown to wintry surroundings. It is at its best in a hollow beside a stone springhouse. The American beech, grey and heavy but with slim, drooping branches, seems especially made for shading sloping lawns with gravelly subsoil. The decorative grey bark and gnarled limbs of the white oak also carry distinctive color through the winter months.

Trees that colorfully enhance beauty during the warmer months are, of course, most numerous. Greeting the gardener in earliest spring with countless, tiny, granular red flowers is red maple, deeply or lightly red throughout the growing seasons. This tree, which prefers damp locations, is followed in bloom by the flowering cherries, pink and white beauties from the Orient. A well-rounded, medium-sized variety (*Prunus yedoensis*) blooms in March

White of the dogwood gleams at the edge of this forest garden — planned to display the trees naturalistically

Inviting in the cool greenery of its trees, its rock garden, pool and shaded lawn, this garden is indeed a "lovesome spot"

or April, displaying a shower of white flowers reflecting the pink light of their bud scales. The Kwanzan variety, smaller and lower branched, blooms a trifle later, rose-like flowers well-nigh covering its young leaves during the latter part of April.

With the coming of May, entrances or rock gardens are particularly bright if white or pink dogwoods have been included in the picture. They are in bloom at the same time as the Kwanzan cherry, grow in flowery layers, and revel in mosaic shade of large trees, such as the oaks. Not so tall, and of different habits, but equally colorful, is *Malus ionensis plena*, one of the exuberant flowering crabs, a spreading little tree that continually lives in the sun. It blooms a short while after the flowering dogwoods. Its large pink blossoms, being double, have an unusually fluffy growth, making this crab a highly pleasing companion for evergreen trees or bushes standing in the background.

Almost any arrangement in the garden permits the presence of at least one thorn and the Washington, (*Crataegus cordata*) is recommended. In the middle of May, when pink columbine and white bellflowers are riotous in variegated borders, and black locust is radiantly decked with flowers, this rustic little tree, densely filling in background with small, triangular, deep green leaves or standing alone in a corner, pleasantly covers its brilliant foliage with sparkling clusters of small, white flowers. Adding to the pageantry of this hardy thorn are the bright red thorn apples of October, which ornamentally linger on the branches even after winter comes.

Conspicuous flowers and fruits and other desirable qualities make catalpa, the silk tree, and European mountain ash fitting subjects to help carry a chain of distinctive colors through the summer months, autumn and into winter. Catalpa, a somewhat tall tree in the East, puts out lobed, light green leaves closely resembling those of royal Paulownia, intermingled, in June, with large clusters of rusty white, cap-like flowers. The silk tree (*Albizzia julibrissin rosea*), slender, irregular, and commonly not half so tall, makes a display of frond-like, deep green leaves which are enhanced, in July, by unusual flowers—pink tufts of silky hair fastened on the end of terminal processes. Colorful pods in winter hang, like icicles, from the different branches of both trees, those of catalpa being long and slender and those of the silk tree flattened. The silk tree and catalpa thrive happily in fertile locations in the sun.

About the time the silk tree blossoms out, European mountain ash (*Sorbus aucuparia*) covers its small crown of ash-like leaves and slender branches with startling orange-red berries, which brighten woodsy settings in July, August and September. The harbinger of these are showy white flowers that come out fully at the same time as those of the hawthorn and black locust. The bright, deep green leaves of *aucuparia*, its at-

(*Turn to page* 312)

MARYLAND ADOPTS FOREST PRACTICE LAW

A FOREST conservation law, designed to regulate forest practices through the medium of forest conservancy districts, has been passed by the state legislature of Maryland and signed by Governor Herbert R. O'Conor. It is the first law of its character to be enacted in the East.

The new law, in brief, empowers the Commission of State Forests and Parks to appoint a Forestry Board of not less than five members in as many districts as may be required, with authority to formulate rules of forest practices on privately owned timberlands. Specifically, the district boards are empowered to issue regulations that will insure (1) adequate restocking of timberlands after cutting, (2) the reservation, after selective logging, of a growing stock of thrifty young trees, and (3) the prevention of clear cutting, except under certain well defined conditions.

A timberland owner may, under the act, develop and inaugurate his own plan of management, provided that the plan is approved by the district forestry board having jurisdiction over his timber properties. A further provision of the law calls for a licensing system for all forest products industries operating within the state.

The Commission of State Forests and Parks is given the power to direct and coordinate the activities of the district boards and to hear appeals from decisions of such boards. If necessary, appeals may be taken to the courts. The Commission is also empowered to promulgate rules and regulations, but administration of forest conservation practices is vested in the Department of State Forests and Parks. Thus it is the duty of the state forester to enforce the provisions of the law.

The district boards, when practicable, will be made up of representatives of local forest and woodworking industries and at least one farm woodland owner, preferably a member of the State Grange or Farm Bureau. Initial appointments will be for terms of one, two and three years, with succeeding appointments in all cases for terms of three years. The Commission is empowered to employ or assign to each board a district forester who will serve as secretary and executive officer.

John M. Nelson, Jr., Chairman

The local boards, so set up, and subject to the general jurisdiction and regulations of the Commission of State Forests and Parks, will perform all acts reasonable and necessary to attain the objectives of the law. They will receive and pass on proposed work plans for the cutting of all timberlands. They will suggest rules of forest practice, hold public hearings, and make recommendations to the Commission.

Further functions of the boards will be to assist land owners to institute approved forest practices; to aid county assessors in their appraisal of growth of forest lands for tax purposes; and to disseminate forest conservation information and collect data relative to the forest problems of the state. In the performance of their various duties, the boards are empowered to enter into agreements with landowners, to cooperate with other agencies of government, municipal, state, or federal, and to enforce all rules and regulations approved by the Commission.

All forest products industries operating within the state after January 1, 1944, will be required by the law to have a license issued by the Commission of State Forests and Parks. Before the required licenses are issued, operators must have conformed to such rules and regulations governing forest practices as issued by the Commission.

The new law, known as the "Forest Conservancy Districts Act", was introduced in the State Legislature by Senator Bernard I. Gonder, of Garrett County. It had the support of Governor O'Conor. Effective June 1, it will be administered by the present Commission of State Forests and Parks, of which John M. Nelson, Jr., a member of the Society of American Foresters, is chairman. Other members of the Commission are State Senator Gonder, who sponsored the bill; J. Miles Lankford, of Pocomoke, representing the Farm Bureau; J. Wilson Lord, of Ellicott City, representing the State Grange; and Sydney D. Peverly, of Bel Air, a prominent lumberman. Joseph F. Kaylor, as state forester, heads the Department of State Forests and Parks.

Senator Bernard I. Gonder

Joseph F. Kaylor

COMING AT YOU, SCHICKLGRUBER!

Maybe you overlooked this machine when you planned your world conquest, Adolf. But soon you'll be seeing it in your nightmares — seventeen tons of "Caterpillar" Diesel D8 Tractor burying you under earth and rock!

You said those soft, money-grubbing Americans knew nothing of making war. Well, we're learning. But there was one important part of war we didn't have to learn, and that was *moving dirt.* Did you ever stop to figure how many million tons of it would have to be moved to win this war, Adolf? You'd be surprised.

You see, we've been using "Caterpillar" Diesels for quite a while. They were ready when we had to build Army camps and Navy bases and airports and war plants in such a hurry. And, meanwhile, over in England they did their part in stopping your invasion. How do you suppose those bombed airfields were repaired so fast, and the rubble of cities cleared away, and the channel fortifications thrown up?

"Caterpillar" Diesel Tractors sort of got in your way in Egypt, too. Did Rommel ever tell you about the forty miles of tank-traps they dug on the Alamein line? Or the trans-African airway they helped build?

Next time you talk to Tojo ask him how the Yank engineers tear roads out of the jungle and the artillery hauls up its big guns with "Caterpillar" Diesels. He found out on New Guinea and Guadalcanal.

So look in your crystal ball, Schicklgruber, and remember never to start a war unless you've got the horsepower to finish it.

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CONSERVATION CALENDAR

Important Bills in Congress with Action
April 14 - May 5, 1943

Appropriations

H. R. 2481—Tarver—Making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1944. Passed House April 19, 1943. Referred to the Senate Committee on Appropriations April 22, 1943.

Fish and Wildlife

S. 1060—Clark, Missouri—To provide expert assistance and to cooperate with federal, state and other suitable agencies in promoting the conservation of wildlife by promoting sound land-use practices. Introduced May 3, 1943. Referred to the Special Committee on Conservation of Wildlife Resources.

Governmental Functions

S. Res. 134—O'Mahoney—Administration of Jackson Hole and other National Monuments and Parks. Reported with an amendment by the Committee on Public Lands and Surveys, and under the rule, the resolution was referred to the Committee to Audit and Control the Contingent Expenses of the Senate April 29, 1943.

Grazing

H. R. 2197—Peterson, Florida—To provide for the acquisition of lands for grazing purposes. Passed House April 19, 1943. Referred to the Senate Committee on Public Lands and Surveys April 22, 1943.

National Forests

H. R. 2633 — Robinson, Utah — To amend the acts of August 26, 1935, May 11, 1938, June 15, 1938, and June 25, 1938, which authorize the appropriation of receipts from certain national forests for the purchase of lands within the boundaries of such forests, to provide that any such receipts not appropriated or unappropriated but not expended or obligated shall be disposed of in the same manner as other national-forest receipts. Introduced May 5, 1943. Referred to the Committee on Agriculture.

National Historical Park

H. R. 1896—Flannagan—To amend sections 1 and 2 of the act approved June 11, 1940, relating to the establishment of the Cumberland Gap National Historical Park in Tennessee, Kentucky, and Virginia, and to grant the consent of Congress to such states to enter into a compact providing for the acquisition of property for such park. Passed House March 27, 1943. Reported without amendment (Report No. 210) by the Senate Committee on Public Lands and Surveys April 29, 1943.

National Monuments

S. 1046—O'Mahoney—To repeal section 2 of the "Act for the preservation of American Antiquities," approved June 8, 1906. Introduced April 29, 1943. Referred to the Committee on Public Lands and Surveys.

S. 1056—Robertson (H. R. 2591—Barrett)—To amend section 2 of the "Act for the preservation of American Antiquities," approved June 8, 1906, with respect to the creation of national monuments. Introduced May 3, 1943. Referred to the Committee on Public Lands and Surveys.

H. R. 647—Short—To provide for the establishment of the George Washington Carver National Monument. Passed House April 19, 1943. Referred to the Senate Committee on Public Lands and Surveys April 22, 1943.

Public Domain

S. 629—Ball—To authorize the conveyance of certain public lands in the State of Minnesota to such state for use for park, recreational, or wildlife-refuge purposes. Passed Senate April 2, 1943. Reported without amendment (Report No. 380) by the House Committee on the Public Lands April 22, 1943.

Miscellaneous

H. R. 2565—O'Toole—To establish the salary of firefighters in the employ of the War Department of the United States. Introduced April 22, 1943. Referred to the Committee on Military Affairs.

"SQUAWS"

NOW it's the SQUAWS. That's what they call the forest guards' wartime women's auxiliary group now being organized on the Mount Hood National Forest in Oregon. Under the direction of Forest Service Guard George Henderson, the SQUAWS are training for the job of helping keep down forest fires this year that might destroy valuable resources and seriously interfere with the war job. They will help in emergency communication, feeding and supplying fire fighters, and a lot of other services on the forest fire front.

They call themselves the "Seasonal Qualified Unskilled Auxiliary Women's Service"—SQUAWS for short.

War need not exhaust the forests for timber is a crop

WAR has a ravenous appetite. It has tremendous capacity for consuming raw materials. Unfortunately, war can threaten a serious depletion of our non-renewable resources. Fortunately, however, war brings no such permanent threat to timber—our most important *renewable* resource.

Timber supplies need never be exhausted, because Timber is a Crop—and because provident management is harvesting timber more and more wisely.

While mature trees are being harvested, nature is seeding and men are planting new trees for future needs. Reforestation and protection for existing timber stands are the respected obligations of good forest management. Good management also sponsors research, which constantly seeks new methods for producing better and more economical forest products. The new uses of forest products which have been developed to make timber serve better in this crisis of war, will help timber to play even more important roles in our post war economy.

Wood will continue to be one of our nation's dependable *renewable* resources. While the demands of war for timber are gigantic, war need not exhaust our timber reserves. Nature has designed timber to be a crop. Management is learning to protect and harvest it judiciously. © 1943, Weyerhaeuser Sales Co.

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THE PRUNING-MANUAL, by L. H. Bailey. The Macmillan Company, New York City. 407 pages. Illustrated. Price, $3.00.

This is the revised and reset—eighteenth edition—of The Pruning-Book, first written by the "master gardener" in April, 1898. Dr. Bailey believes that while pruning is not a paramount or controlling practice in horticulture, it is one of the many important phases needing full discussion and he has made of this book—not a mere guide to the practice of removing parts of plants, but a clear study of the whole character of plants, and their varying demands in cultural practice. In it he gives his accumulated knowledge of the best methods and procedures, modified somewhat by recent findings. It is a revision of an important book in a special field, made by such revision even more useful to the grower and horticulturist.

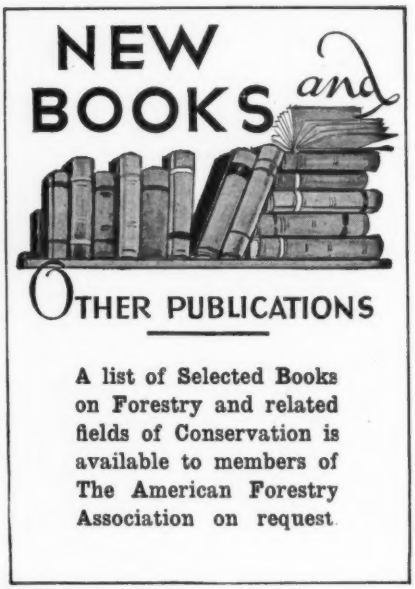
AZTECS OF MEXICO, by George C. Vaillant. Doubleday, Doran and Company, New York City. 340 pages. Illustrated. Price, $4.00.

Here is described, by an authority, a complete account of the birth and death of one of the great civilizations of the world. The Aztecs arrived from the North in Mexico in the eleventh century and developed an extraordinary culture and way of life, and Dr. Vaillant has set down its history. Beautiful half-tone plates contribute to its intense interest, and the book is an outstanding addition to the History Science Series of the American Museum of Natural History.

TIMBERS OF THE NEW WORLD, by Samuel J. Record and Robert W. Hess, 1943. Published by the Yale University Press, for the Yale School of Forestry, and for sale by the Yale School of Forestry, New Haven, Conn. 640 pages, 58 illustrations, 8 maps. Price $10.00.

This book brings together more botanical and commercial information regarding the trees and forests of Latin America than has ever before been assembled. The trees of North America have been rather summarily treated, probably because so much more is known about them than about those of the regions to the south; perhaps also because of the great potential importance of Latin American forests to the people of two continents.

Professor Record, the senior author, is dean of the Yale School of Forestry, editor of *Tropical Woods* and an internationally known wood technologist, and has spent many years in field and laboratory studies of Latin American forests. Professor Hess is a wood technologist of note.



The book is written for the botanist, the wood technologist, the forester, and the man in the forest industries. Considering the number of Latin American scientists who have cooperated with Record and Hess, it is a monument to the good neighbor policy as well as a valuable piece of scientific literature.

THE LAST RAFT, by Joseph Dudley Tonkin. Published by the Author, Telegraph Press Building, Harrisburg, Pennsylvania. 147 pages. Illustrated. Price, $1.50.

History of timber rafting on the Susquehanna River and its tributaries in Pennsylvania, with a vivid portrayal of the natural wealth, particularly in the West Branch region, of the Susquehanna Valley. Beginning with the early settlers, this unique volume goes through the Williamsport boom and concludes with the odyssey of the last raft.

BIRDS OF NORTH CAROLINA, by T. Gilbert Pearson, C. S. Brimley and H. H. Brimley. North Carolina State Museum, Raleigh. 448 pages, 37 full-page plates, 20 in colors, and 141 text illustrations by Rex Brasher, R. B. Horsfall and Roger T. Peterson. $3.50.

This handsome and unusually well-written book is a much-enlarged and completely-revised volume by the same authors issued in 1919. It treats of the distribution and nesting, feeding and migration habits of 396 species and subspecies of birds which have been found in North Carolina.

Dr. Pearson, as senior author, drafted the manuscript from material collected by the three authors and as many as 250 other observers. Historically it covers records of birds made in the State by competent observers from 1584, when Captain Barlowe visited Roanoke Island, down to the year 1942.

The book deals with birds found not only in North Carolina but also with nearly all species found throughout the South Atlantic States. Comprehensive and beautifully illustrated, the volume occupies a place among the half dozen best state lists of birds thus far published in this country.

SIERRA OUTPOST, by Lila Lofberg and David Malcolmson. Published by Duell, Sloan & Pearce, Inc., New York. 253 pages. Price, $2.50.

The experiences and emotions of a nature lover high in the Sierra of California. Fascinating stories of friendships with the birds and beasts of the mountains, particularly during the months of winter solitude when marooned by snow from the outer world. A delightful volume in every respect.

THE FORESTRY DIRECTORY, compiled by Tom Gill and Ellen C. Dowling. Published by the American Tree Association, Washington, D. C. 411 pages, illustrated with maps and charts. Price $2.00.

Well named, this book comes from the press to meet a real need, for it is a compendium of useful information about forestry, taking in the whole broad field down to date.

The introduction, written by Randolph Pack, president of the American Tree Association and a director of The American Forestry Association, touches the decade just passed and characterizes it as representing ten of the most important years in the history of forestry in America, due largely to the enormous growth of public interest in both forestry and conservation. Ten years ago the last edition of the *Forestry Almanac* was published and in the "Directory" will be found all it contained, completely revised and greatly expanded to cover the growth and accomplishment of the last ten significant years in national, state and private activities, and in the field of forest education as well. Included also is full information on the forests of the Dominion of Canada, and the latest development in the production and uses of wood and forest products for war purposes.

Nineteen years ago the Tree Association brought out the first edition of the *Forestry Almanac*. The Forestry Directory of today did not spring, — full-fledged, from this original document, but has evolved slowly through the careful collection of accurate facts, expertly handled by its compilers to meet the need of every researcher in the important field it covers.

John A. Newlin Dies

John A. Newlin, one of America's outstanding authorities on the use of wood as an engineering material, and for many years chief of the division of timber mechanics at the Forest Products Laboratory, Madison, Wisconsin, died on March 27. He was seventy-one years old.

A pioneer in engineering research in the strength of wood, Mr. Newlin retired from the Laboratory staff only seven weeks ago, after thirty-nine years of service. The research programs he conceived and directed not only have guided the laboratory's work in timber mechanics, but have had a deep influence upon similar work carried out in other countries. Besides shaping wood testing programs, from which were evolved many mathematical formulas now widely used in the design of large buildings and other timber structures, he developed basic test methods and machines.

John A. Newlin

An authority on wood aircraft, Mr. Newlin, during World War I, was in charge of the design and assembly of wood aircraft parts for the United States Navy and authored several reports on airplane materials. Also a system of prefabricated plywood house construction was developed under his direction.

A native of Indiana, Mr. Newlin was graduated in 1900 from Purdue University with a degree of bachelor of science in civil engineering.

I'm sorta in the Army now!

Dad asked me how would I like to be in the Army, and I said I'd like it swell, so he said okay, soldier, you're now on coyote detail.

Well, I'd never thought that knockin' off coyotes had anything to do with the Army, but Dad said it did, and I can see why now.

Take this fellow here, for instance. He's raised heck with our stock for a long time. And that meant less meat for our armed forces, who are knockin' off some even bigger coyotes on their own account.

Well, this coyote here was pretty smart . . . up to today. But today I found a fresh track of his, and the wind was right. Old Betts and I found him, and pow! One shot from my Remington . . . and one less critter.

I know Dad is gonna be mighty pleased about it, and of course I am, too. It shows I'm a pretty slick shot . . . if I do say so!

' ' '

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—during 1942, Remington produced enough small arms ammunition to fire more than 300 times at every Axis soldier.

—during the last 7½ months of that year alone, Remington produced more small arms ammunition than the entire country produced during all four years of World War I.

—thousands upon thousands of military rifles were speeded to our armed forces all over the world.

—and Remington has received four Army-Navy "E's."

The many thousands of us who are Remington are grateful that we are able to serve our country. And after the war is won, we will be glad to serve our sportsmen friends again with the famous Remington line of sporting arms and ammunition. *Remington Arms Company, Inc., Bridgeport, Conn.*

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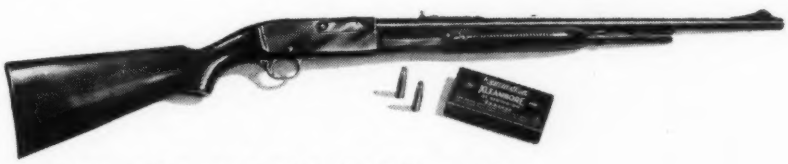

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Unless Americans do something about it, 200,000 fires will this year destroy timber equal in volume to the wood required in the building of 20,000 Liberty ships, or 2,000,000 Army truck bodies. These fires will consume around 2,000,000,000 board feet of merchantable timber — wood desperately needed to keep our war plants operating at full capacity and to keep our fighting men supplied with food and arms.

Remember — this did happen last year. It has been happening every year since man took over the stewardship of the land. It can happen this year unless Americans realize that they can't win with forest fires — and mobilize against them with conviction and determination.

These stamps will help spread the message of forest fire prevention. Each stamp beautifully printed in 4-colors. Available in sheets of 100 at $1 a sheet. They are ideal for use on letterheads and envelopes, and each sheet used will mean that 100 individuals have been appealed to directly in the immediate fight to "stop forest fires before they start."

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Trees for Your Garden

(*From page* 305)

tractive shape, colorful habits, and lack of fussiness about soil should make this an easy tree for which to choose a companionable position when making arrangements in the garden.

The festive colors of leaves in the autumn, though frequently quite unstable in the case of certain species, also appear in regular succession in the foliage of different trees inhabiting a similar location, the approximate time of their appearance being fixed by winter weather. The cause of unstable foliage colors is found in the inherent nature of different trees and their reactions to sunlight and shade and cloudy or rainy weather or sudden drops in temperature. Thus, if a tree such as pin oak, which commonly turns red in the autumn, is put in, it may display red or yellow leaves tinted with different blends or mixtures of these colors.

Trees which inhabit protected positions in the sun change the color of their leaves later than those which inhabit protected positions in the shade, while trees inhabiting exposed positions change the color of their leaves earlier than trees inhabiting protected positions. Planting attractive mixtures of trees that color in succession will prolong the autumn season and give the months before winter a particularly festive air.

Yellows, oranges and light browns are the chief colors which come out in the foliage of different early growing trees in September, the autumn colors of black locust, linden, the oriental plane tree, American beech, poplar, catalpa, and silver maple serving as examples. Bright reds, scarlets, and purples, on the other hand, are ordinarily saved by wintry weather to stain the finery of reluctant trees that won't show their fall colors until October or November—though yellows in these months, as illustrated by elms and sugar maple, are not lacking. Red maple and similar trees are coated in radiant hues before the very late growers, such as hawthorn and the oaks, which are among the last trees in temperate regions to surrender their greenery to winter's colorful advances. It will be of use to remember it is the late growers which are likely to have autumn leaves with changeable colors.

A pleasing arrangement of a group of trees, of course, implies more than just rolling up the sleeves and going to work. It is something well worth not striving for without assistance until all the various complex factors involved are thoroughly investigated, understood, and taken into consideration. For trees, with few exceptions, it must be remembered, are relied upon to form part of the permanent framework of the garden.

Paper At War

(*From page* 281)

It must not be assumed that all these extensions in the ordinary applications for paper have been clear sailing. Endless research has been invested in moisture-proof treatments, in grease-proof barriers and laminating technics. Considerable mental perspiration has been expended and there are many stories of heartaches and frayed nerves which have been assuaged only by perseverence.

Turning to some of the completely new developments, of particular interest are the high strength, low-pressure, paper base plastics. As may be known, impregnated papers have been formed into laminates and used for a variety of purposes for many years. Generally, however, they have been made at high pressures. Their strengths, while good, have not compared with the light metal alloys, nor have they, because high pressure is required, lent themselves to fluid molding technics.

The new types of paper base plastics are interesting because of their unusually high strengths, because of their lightness, and because they can be laminated or fabricated at pressures considerably lower than those previously employed. The strength characteristics of this new laminate—pound for pound, its tensile is as good as aluminum—suggest that it can substitute for metals in many places, while the lower molding pressures expand conversion possibilities, and circumvent to a degree, the equipment bottle-neck involved with high pressure technics. The WPB's War Products Development Section of its Pulp and Paper Division has devoted considerable time to the study of all aspects of this development, and it is fair to say that it is being followed aggressively by the paper industry, the resin industry, the laminators, the convertors, and by the potential consumers, who, at this time of course, are the armed services.

It is believed generally that the new laminate possesses characteristics making it suitable for the construction of selected aircraft parts as well as other munitions. It has deficiencies, the principal one being its lack of ductility or yield under stress. In many regards, however, it compares favorably with plywood, fabric laminates, and the light metal alloys. High strength, low pressure paper laminates will bear watching, both during and after the war.

One of the most romantic developments in the paper industry is the new overseas shipping container, ordinarily referred to as the "V-Box."

Several months ago, those responsible for overseas shipping were harassed by tragic stories filtering back from far-flung ports and bases. There were re-

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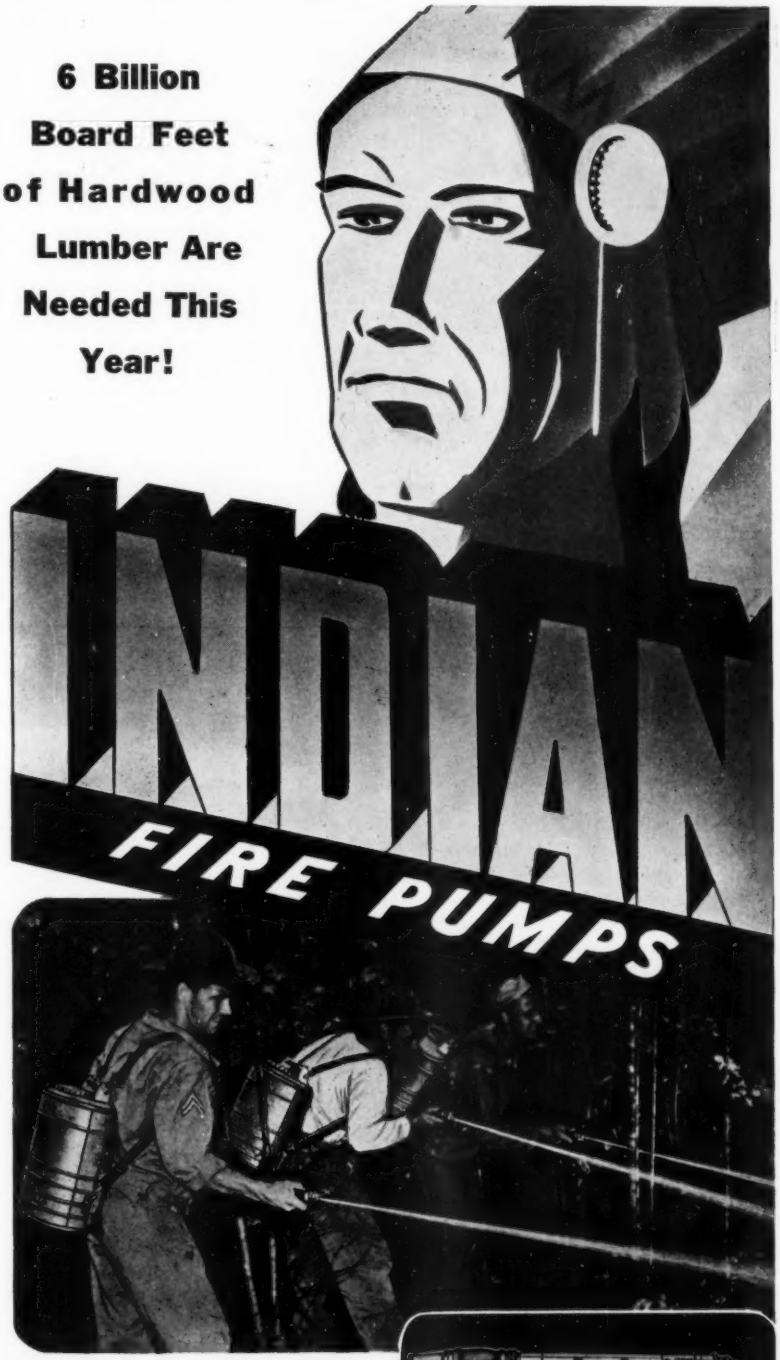

EVEN in peace time forest fires cause an enormous waste of natural resources and tremendous damage to forest cover of watersheds. During war such losses are a staggering blow to construction of barracks, bridges, ships, airplanes and countless other military items. Citizen fire fighting brigades equipped with INDIAN FIRE PUMPS can be of great assistance in stopping this drain on our lumber supply. Remember — *clear water does the job.* *Send for catalog.*

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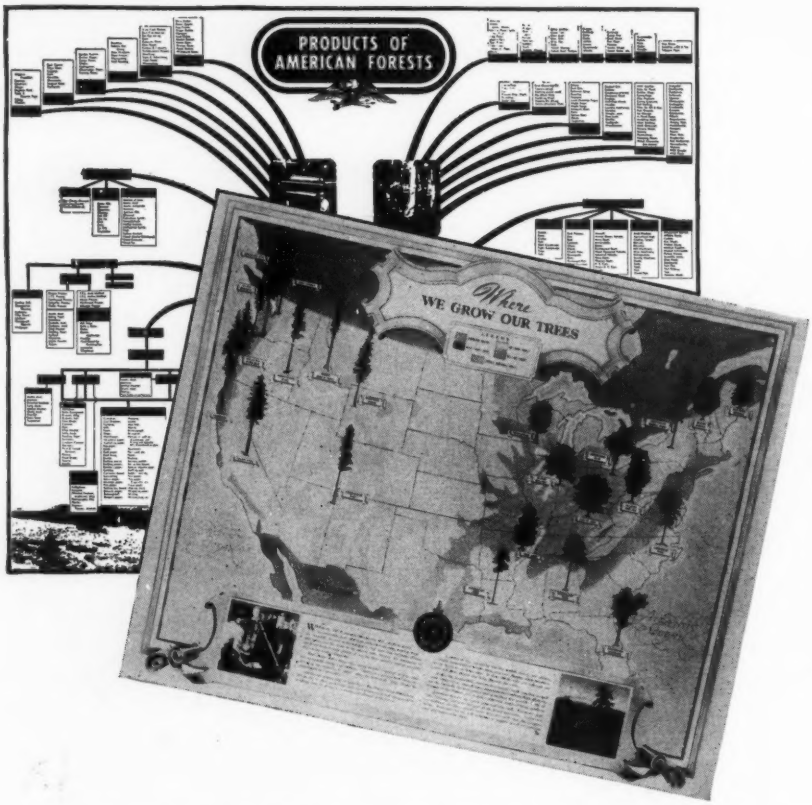

American Forest Products Industries, Inc., Washington, D. C., has recently added this forest map and forest products chart to its line of educational material. The chart, classifying several hundred derivatives of the forest harvest, is 25 x 30", printed in three colors. The five-color map, 28 x 34", locates the nation's main forest areas and principal species. Both are intended primarily for classroom display. Send requests to:

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ports of lost supplies, of damaged equipment, and of wasted hours spent in the salvaging of scattered parts and subsistence materials. The villain in many of the incidents was the paper box. There was a strong opinion that all overseas shipping should go in wooden boxes.

Inasmuch as paper boxes have been used for years in export shipment, it was disconcerting to learn of their failure in war time. The reason, however, was soon apparent. In a crisis, materials cannot be handled gently. Speed is the secret of successful operation, and when one is hurried he does not pack quite as carefully as he would otherwise. Supplies often are brought to a base by running through a gauntlet of submarines, enemy artillery, and air-straffing. One is not inspired under such circumstances to lift each package separately and place it squarely on a dock or lighter. Often, containers are dumped into the surf where they may be tossed about for a day or two before collection. A satisfactory container, therefore, must not only have strength to meet normal handling, but it must withstand prolonged immersion in water and retain its shape and strength sufficiently during that period to endure subsequent handling and abuse.

Obviously, the answer to the failure of paper shipping containers was not conversion to wooden boxes. Lumber was critical; there was not enough to go around. Besides, wooden boxes required more metal than paper boxes and took more shipping space. The goal, which seemed fantastic at the time, was to develop a paper box that would perform in every respect as satisfactorily as a wooden container. The efforts of the industry were focused upon this problem.

After intensive experimentation, a solution was found. The result is that today there are overseas shipping containers having a dry mullen test of over 750 pounds, and after prolonged immersion in a turbulent surf, a wet mullen of over 500 pounds, as well as the ability to stand up under at least twelve drops to a concrete platform. This is an outstanding achievement and a distinct contribution to the effective prosecution of the war.

We read of daily bombing excursions over Europe and of the thousands of tons of metal which are dropped by air artillery. It is not generally known that every bomb, from the time it is manufactured until it is placed in the bomb bay of a plane, is handled and protected by grommets, or rings. These rings have been made of steel and in the United States alone, around 150,000 tons of steel for this purpose were consumed annually. Through the aggressive work of one paperboard manufacturer, in co-

operation with Army Ordnance, a ring has been developed which is made substantially out of chipboard. This new ring is an adequate substitute for the metal one, and furthermore, it does a better job of protecting and handling the bombs. Metal conserved as a result of the development can run to well over 100,000 tons yearly, or as Ordnance has stated, sufficient to produce more than 300 tanks a month.

New paper printing plates also have been developed. These are used in certain duplicating processes and in general offset printing. Many of the reports and forms turned out by the War Production Board are printed from paper plates. Excellent half-tone work is possible and the technic lends itself both to black and white and to color printing. From 30,000 to 40,000 reproductions are obtained from one plate. The savings in zinc and aluminum are significant. While the development is timely in terms of the war, its technical advantages predict a significant post-war application.

This country normally uses around 200,000 tons of steel in the manufacture of strapping. Of this, roughly one-half, or 100,000 tons, is used in the fabrication of "heavy duty" strapping, the use requirements of which are such that only steel can do the job. In some of the other fields where applications are less rigorous, it has appeared that a substitute might be employed during the emergency—the strapping for example, of lighter weight bundles and boxes, and the baling of commodities such as pulp, waste paper, cotton and clothing.

Considerable work has been done on the development of paper strapping for such purposes. It is necessary, of course, to use tension tools and clamps which will adequately handle the new strapping and not bite into the fiber too much, thereby diminishing its strength and holding power. Experiments indicate that clamps can be adapted for this purpose and that the paper holds its tension load surprisingly well. Already, there is a light paper strap in use which appears to be suitable for handling packages weighing up to a hundred pounds. It has been approved for a special Ordnance application. There are many other opportunities for paper strapping to serve and it is expected that its use will be extended in the future.

Insurance underwriters always have frowned upon the use of non-metallic materials for hot air ducts and heating plants. In the past few months, however, there has been developed an ingenious type of laminated paperboard which is covered on its exposed sides with a thin layer of asbestos. This material has been approved by all under-

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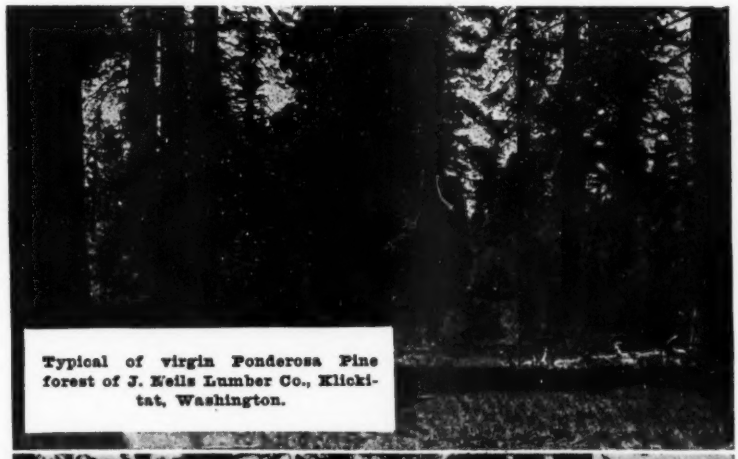
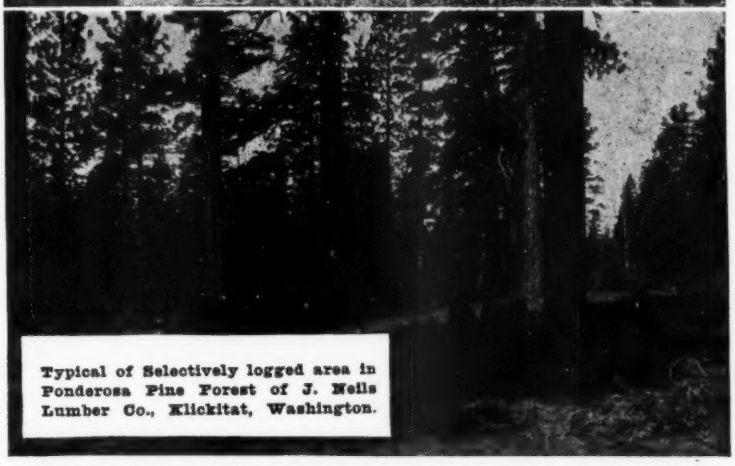


Typical of virgin Ponderosa Pine forest of J. Neils Lumber Co., Klickitat, Washington.



Typical of Selectively logged area in Ponderosa Pine Forest of J. Neils Lumber Co., Klickitat, Washington.

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writers and already is installed in some defense plants. It is light, its insulating characteristics are excellent, and it appears to meet all use requirements. The application of this material is limited only by production facilities. Proposed installations would save approximately 80,000 tons of metal in one year.

There are other applications for paper, including many important ones, which cannot be mentioned here because of lack of space. Suffice it to say that they are numerous and have appeared so rapidly that it is impossible to prepare a list which will catch the coat-tails of the latest developments. There are the paper filters used in motors in place of the customary brass filters. There are the jettison tanks made from treated paper fiber, the paper parachutes, the offensive hand grenades, the bomb fins, the new bags for carrying 100-octane gasoline, the paper vests, the flare spacers, the walky-talky battery cases, the paper clocks with paper gears, the paper flashlights and a host of other items, some of which cannot be mentioned for military reasons. One day the complete story of all these developments may be told. It will be worth reading.

The paper industry is very much in the war. This is true of the new developments and it is equally true of the older applications of paper. It can safely be said that in "the battle of production," the paper industry has taken its place at the front line and is fighting shoulder to shoulder with other American industries which have attacked their problems with equal vigor and with a creative enterprise that can only lead to complete victory.

Historic Forest Fires

(*From page* 294)

cluding hundreds of CCC boys, many of them fresh from eastern cities. These boys fought so well as to incite the admiration of old-time loggers and woodsmen of the Pacific Coast. One CCC boy was killed, and a score were injured.

So dense was the smoke-fog during the days that lights in the coast towns had to be turned on, chickens went to roost, and motors crept along the smoky roads. Enormous smoke clouds rose 40,000 feet and billowed west over the Pacific Ocean. Ashes and cinders fell two inches thick along the coast and were wafted out over the ocean to be washed up later in long windrows on the beach. The loss of wildlife was appalling. Many charred bodies of deer were found, in most cases lying with their heads pointed westward as they ran to escape the racing inferno.

Wyoming again appears in fire history in 1937. The Blackwater fire, August 18 to 22, covered only 1,254 acres, but it took a terrible toll of human life. Starting from a lightning struck tree, in rough, steep, high country from 9,000 to 11,000 feet elevation, and aided by low humidity and high variable winds, this fire trapped and burned fifteen men. In addition, thirty-nine fire fighters were injured. Two forest rangers, one foreman, one young forester, and eleven CCC enrollees made the supreme sacrifice. The human toll would have been far heavier but for the judgment, coolness, action, and heroism displayed by Ranger Post, Junior Forester Tyrrell, and Foreman Sullivan. These forest officers herded thirty-one CCC boys and seven Bureau of Public Roads men up onto a narrow, rocky ledge, the only possbile retreat, and kept all but five of them there prone while fires swept alternately from either side over this small island in a sea of smoke and flame. Afterwards these men were led out to safety. Post, Tyrrell, and Sullivan were awarded the American Forest Fire Medal for heroism on the fire front. Tyrrell's was awarded posthumously.

Ranger Clayton with a crew on another part of this fire was trapped with seven men in a narrow gulch and burned to death.

In 1939, on the anniversary of the Blackwater fire, a large monument or memorial was dedicated on Blackwater Creek, along the Cody-Yellowstone Highway, US-20, to the fifteen men who gave their lives in fighting this fire. And here it may be recorded that during the nine-year life of the CCC, forty-two enrollees and five foremen lost their lives in forest fires in this country.

In this brief account of historic forest fires there is recorded the loss of 2,974 human lives. The loss in timber, our most valuable raw resource, amounted

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in value to billions of dollars. Then there is the loss of watershed values and wildlife. Homes, towns, business and farm buildings and livestock would add millions more to the devastation.

Can such conflagrations occur again? Much country has been cleared, there are more CCC roads and trails, protective agencies are numerous and better trained and equipped; there are more telephone lines and radios, more fire lookouts to pick up fires while they are still small, and the science of predicting fire weather has been greatly perfected; and there are planes to drop parachutes with food, tools, and fire fighters. All true, but look back at the statement of weather conditions in the summer of 1902! Those conditions may be repeated. But the people of America, you say, are more careful with fire in the forests today than ever they were in the old days? Let us hope so.

And in December, 1941, war came to this country, war to multiply and intensify the normal hazards which forests must undergo from enemies within and enemies without.

Of forests and national defense, Lieutenant General Hugh A. Drum, U. S. Army, has this to say:

"Protection of our forests is one of the most important duties a citizen may perform in time of war. Wood, like oil, is essential to our war machine. Forest fires destroy a priceless source of raw materials and also serve the enemy by endangering vital installations. In protecting our forests in time of war we preserve a national heritage for the days of peace."

Blackout Bass in the Nation's Capital

(*From page* 301)

boy up," he smiled as he held his rod in a combination hand and knee grip. "Go ahead and see what you can stir up from that likely looking spot next to that rotten piling. I'll handle the paddle."

Slowly Ed paddled the canoe forward a few yards until his bug had moved in and taken a position directly astern. Then he suddenly came to life and I heard a tell-tale splash out in the night. Hardly had he dropped the paddle and assumed control of the swishing situation than I felt a strike, leaned back on the rod and set the hook.

"Got him," Ed grinned.

"Me too," I added, "only mine doesn't act like the last one. Lots of fight but no dashes and jumps."

"Maybe a crappie," suggested Ed, "though they don't often take surface bugs at night."

"It's a crappie nevertheless," I replied, slipping out the net under the splashing form. "A crappie and a honey—he'll go nearly a pound."

"Pass the net on up here," said Ed, bringing in his second bass alongside. "Not as large as the first, but a mighty fine keeper at that."

"Think this is enough for tonight?" I queried.

"Yes," replied Ed, "the rest go Scot-free. This ought to be plenty to find out whether they're fit to eat or not. I understand there is quite a bit of sewage dumped in here. That in itself doesn't hurt, makes 'em fat, but its conducive to an over-growth of mold-like organisms — a group called *actinomyces* — which produces that pungent, earthy, or muddy odor and taste in fish."

"Apparently it doesn't hurt their fighting ability," I chided at the dissertation.

"None in the least," he replied. "As a matter of fact, it seems to pep 'em up."

As we settled down to dismantling the rods, Ed reflected, "Right in the shadow of the Jefferson Memorial, and a stone's throw from the Washington Monument. Who would have thought it?"

"It's downright funny," I added. "Here we've been fussing around, lamenting the fishing we left back home, and we run smack into some of the best I've ever seen—and right at the President's back door.

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Dream Mountain

(*From page* 285)

would often fail to rise in cumulus splendor.

No story of the beauty of this mountain would be complete without a picture of its winter garb. How jauntily it wears its ermine cap on a January morning, and with what grace it carries its gray-trimmed cloak thrown over its spurred shoulders. Give to this whitened hill a winter sunset glow with a deep blue sky beyond, and where can it be matched for purity and splendor?

If Chocorua stands for the personification of beauty, it is also the incarnation of strength. Weak and troubled human beings have gained sturdiness on its slopes. Granite boulders and deep-rooted trees are Nature's answer to all defeatism. Take a good look at that small but virile tree with roots thrust deep into cracks and crevices. There it has stood for years against wind and frost, defying the mountain blasts of winter and droughts of summer. Victory is its cry, echoed by every rock and cliff.

Chocorua has other unassessed values: It speaks of patient calm that stands firm through all the ages. Storms may wail and moan about its summit, snows may heap high in its ravines, and torrents roar down its sides, but when the mists have rolled away there stands the mighty hill just as it was last week—just as it was a thousand years ago.

Among the hidden values of this mountain is the perpetual mystery pervading its upper reaches. Indians stood with arms outstretched toward those high rocks, and white men have looked upon them in awe and reverence. Just as the Greek gods dwelt on a mountain top, surely do spirits of the past and present abide near and within the sacred horn of Chocorua.

He who wrote "I love thy rocks and rills, thy woods and templed hills" must have known this mountain.

Two-Way Waste

(*From page* 289)

Six thousand Yellowstone elk were taken by hunters this year and 600 additional were killed inside the park by rangers. There seemed no other practicable solution to the problems of starvation and range ruin—two-way waste. Sportsmen and others understood the situation and few protests were made. People realized that other plans to keep the herd within common sense limits had failed. It was a simple question of taking firm control of the situation or bidding goodbye to one of the two largest elk herds in the world.

Since 1880, the southern elk herd, which winters in Jackson Hole, has not had a very happy life either. These elk have a summering range adjoining the other herd on Big Game Ridge and the headwaters of Yellowstone River. Migration is southward, to the open country on the Gros Ventre River and around the city of Jackson, Wyoming. A few miles from Jackson is the National Elk Refuge of 21,000 acres where hay is raised to feed the herd during severe winters. This is fifty or sixty miles from the summer range and twice that distance from the badly overgrazed Yellowstone Park winter range.

Rangeland in Jackson Hole has never been as badly overgrazed as in Yellowstone Park, nor have the terrible winter starvation losses in the herd been quite so great. This winter the loss, according to the Jackson's Hole *Courier*, was only about ten percent, in spite of exceptionally deep snow and sub-zero weather. As none of the herd's winter range was in a national park, hunters have taken a more even kill year by year than was possible in the northern herd. Disease has taken a heavy toll during some years; yet in spite of all the drains on the herd its size—around 11,000—is considered far too large for its food supply.

It would seem that a proper reduction could be made by Wyoming hunters without the necessity of governmental slaughter. However, the situation is further complicated by the establishment by presidential proclamation on March 15, 1943, of the Jackson Hole National Monument. This new federal

(*Turn to page* 320)

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Which comes first— Your second helping? or our second front?

YOU WANT TO SEE THIS WAR WON — and won quickly. You want to see it carried to the enemy with a vengeance. Okay—so do all of us. But just remember...

A second front takes food... food to feed our allies *in addition to* our own men.

Which do you want — more meat for you, or enough meat for them? An extra cup of coffee on your breakfast table, or a full tin cup of coffee for a fighting soldier?

Just remember that the meat you don't get— and the coffee and sugar that you don't get—are up at the front lines—fighting for you.

Would you have it otherwise?

Cheerfully co-operating with rationing is one way we can help to win this war. But there are scores of others. Many of them are described in a new free booklet called "You and the War," available from this magazine. Send for your copy today! Learn about the many opportunities for doing an important service to your country.

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Two-Way Waste

(*From page* 318)

reserve on which hunting is prohibited consists of some 210,000 acres and extends from the Grand Teton National Park on the west across the valley to the Teton National Forest. It even includes about 100,000 acres of national forest land. Grazing of cattle and sheep is not to be curtailed on this new reserve, according to a statement of Department of Interior policy published in the *Courier*, so here is a set-up for either a badly overgrazed range or governmental slaughter of more elk. One or the other is bound to result, probably both, as has been the case in Yellowstone Park.

From the standpoint of game management it seems that this withdrawal of hunting grounds into an area of national monument status is ill-advised.

There are many other areas in the West where game ranges are deplorably overgrazed and on the road to ruin. Cattle and sheep are in some cases partly responsible, but these domestic animals are removed to feeding lots when winter comes. It is elk and deer which die of starvation.

In this time of world wide food shortages it seems a pity that game managers, both state and federal, cannot get together to accomplish the dual purpose of utilizing thousands and thousands of deer and elk that otherwise die of starvation, and at the same time arrest the downward progress of thousands and thousands of acres of game ranges.

Common sense dictates at least that much management.

CREDIT FOR PHOTOGRAPHS

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Roberts, H. Armstrong—front cover insert.
W. M. Rush, pages 287 (upper), 288, 289 and 290.
Signal Corps, U. S. Army—page 278 (upper).
St. Regis Paper Company, page 280.
U. S. Forest Service — pages 290, 291, 292, 293 and 294.
Whitman, John Pratt — (pencil paintings), pages 282, 283, 284 and 285.

WHO'S WHO

Among the Authors in this Issue

JOHN STRANGE (*Paper At War*) of Wisconsin, until lately Chief of the War Production Development Section, Pulp and Paper Branch of the War Production Board at Washington, D. C., was recently appointed Secretary of the Institute of Paper Chemistry in Wisconsin.

JOHN PRATT WHITMAN (*Dream Mountain*), artist and writer, was born in Glenview, Kentucky — "surrounded by forest." Though he later went to live on the plains of Kansas, and still later traveled widely, his early love of the woods colored his whole life. At "The Forest"—his home in the beautiful hills of New Hampshire, Mr. Whitman writes and does his beautiful "pencil paintings."

WILLIAM MARSHALL RUSH (*Two-Way Waste*) writes from Portland, Oregon. A former Forest Service man, he later went to the Biological Survey as regional director in the Northwest, resigning in 1939 to write, for he knows the wildlife of that great Western country as few people do.

John D. Guthrie

JOHN D. GUTHRIE (*Historic Forest Fires in America*), writer and forester, is a native Virginian. With the Forest Service since its inception, widely known both here and abroad, his long and brilliant career stamps him as one of America's first-line foresters.

F. WALLACE TABER (*Blackout Bass in the Nation's Capital*), sportsman and writer, says he's loved fishing since birth and "majored" in it at college. "I got my A.B. in Vertebrate Zoology at the University of California, my M.S. in Fish and Game Management at Texas A & M and was pretty well along on my Ph.D. in Ichthyology at the University of Michigan when war came along." He is now on a war detail at the Glenn Martin Bomber plant near Baltimore, Maryland.

O. H. STUDE (*Trees for Your Garden*), native Marylander, was graduated from Johns Hopkins University, where he majored in natural sciences and English literature.

ALBERT ARNST —

It was erroneously stated in this column in the May issue that Mr. Arnst was attached to the Forest Service, whereas in 1937 he transferred to the Soil Conservation Service.

THE COVER—"Hopeful"—Photograph by H. Armstrong Roberts.

OUR CARELESSNESS

YOU can help prevent disastrous forest fires!

Carelessness starts more than 200,000 forest fires in the United States every year.

Carelessness destroys millions upon millions of feet of timber, now a critical war material. It cripples watersheds that supply hydro-electric power to war industries. And the fighting of forest fires diverts precious labor from factories and farms.

Many persons who start these fires toss away matches and cigarettes that aren't dead out. Many others burn to clear plow-land or logging slash or grass or debris and—the fires they start break away into searing, roaring flames that destroy timber, forage, wildlife, and beauty that may never be replaced.

Each of these persons forgot—for a moment. And each thoughtless act was as destructive as if it had been the act of a saboteur.

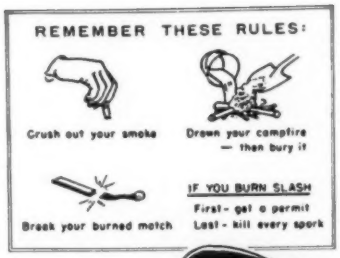
YOU can help prevent disastrous forest fires by observing the four simple rules illustrated here when you're in forest areas. And by seeing that others observe them.

ATTENTION, BRUSH BURNERS!

More than 6 million acres are burned, yearly, because of YOUR careless use of fire in clearing plow land and burning logging and other slash and debris. ***Do your part this year.***

Remember:

1. **Don't burn without a permit from a ranger or fire warden.**
2. **Don't burn during unusually hot, dry, or windy weather.**
3. **Scrape a trail or "plow around" areas to be burned.**
4. **Have help handy till the last spark is dead.**



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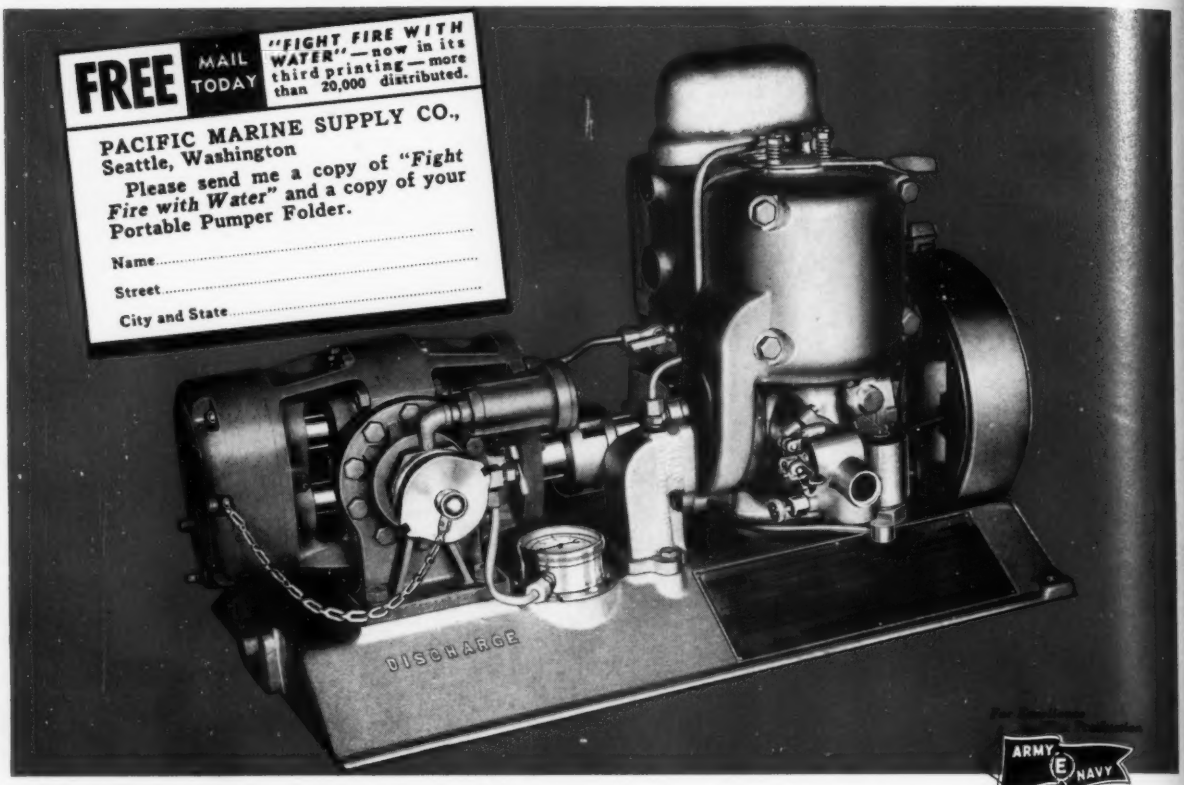

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